Textile World

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CONTENTS DECEMBER, 1936

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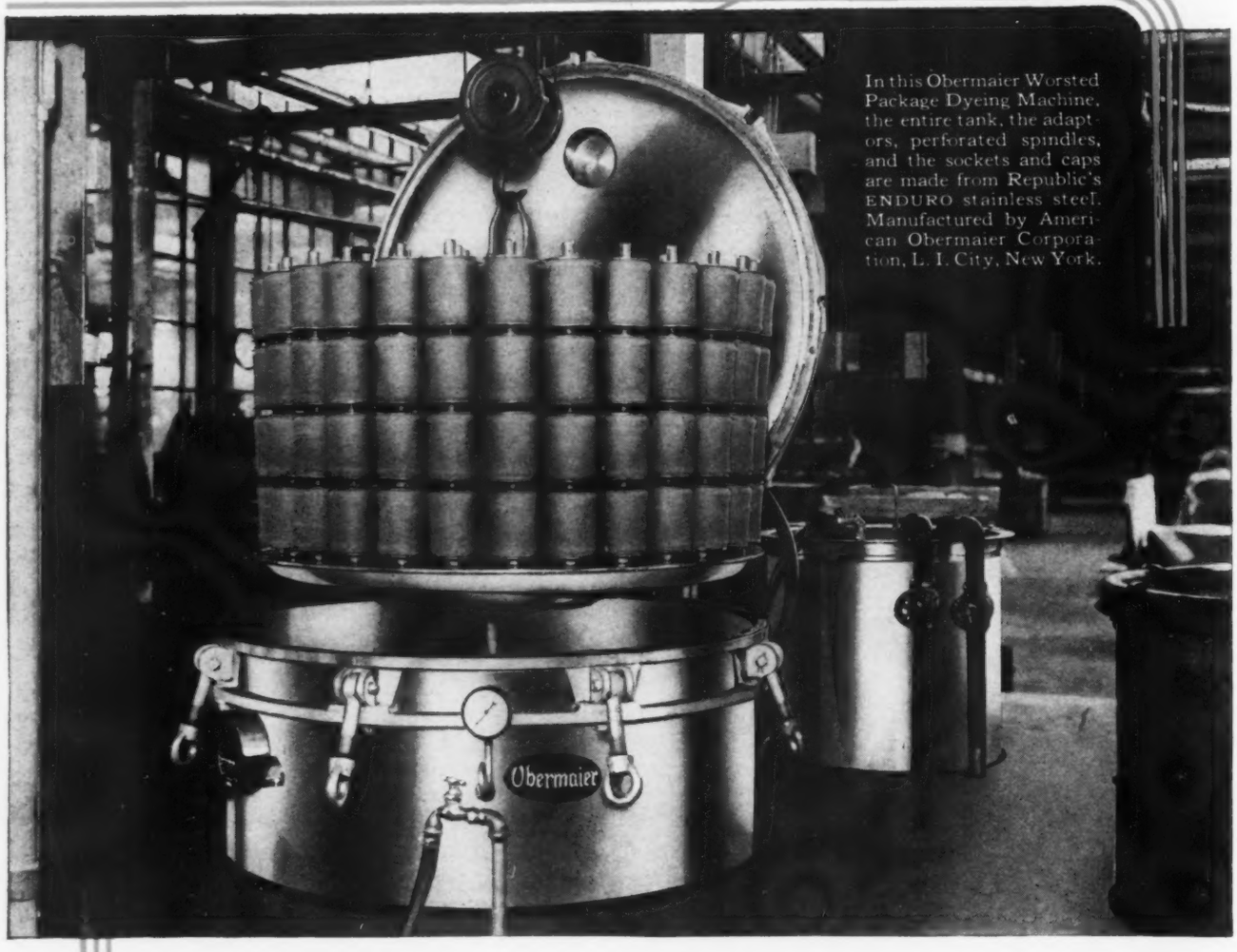

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Textile World

December, 1936

Editor: DOUGLAS G. WOOLF

The Answer Must Be Found

HISTORY again repeats itself. Industry is now experiencing the same uncertainty concerning future legislation as that which made the spring of 1933 such a mad period. Many of the conditions are the same: the threat of a 30-hour bill and of a Federal licensing bill; the advance push of pressure groups; the age-old clash between extremists in both the liberal and the conservative ranks.

Out of that whirlpool in 1933 came the National Industrial Recovery Act. Out of this one will come —what? Some believe nothing will come out; some hope nothing will. But the number in each of these two groups—at least so far as the textile industry is concerned—has decreased rapidly. The majority of manufacturers in this industry, we are convinced, are reluctant to face a future which offers no protection for the majority against uneconomic practices of a minority. They are reluctant to go along without *some* enforceable limitation on the competitive pressure to reduce wages or to increase hours.

Fortunately, the present situation has two great advantages over that of 1933. First, there is not the rush which existed then due to the emergency. Industries do not have to accept the first plan proposed; statesmanship, rather than expediency, may now prevail. Second, there have been three and a half years of valuable experience, as a guide. Lessons have been learned. Terms which meant vague nothings to the textile industry in 1933 have become household words.

Always important in a case of this sort are the negative lessons. For instance, textile manufacturers have learned that the answer is not a 30-hour bill, nor a Federal licensing bill, nor an Ellenbogen bill. Each of these is based upon either a punitive or a straight-jacket principle—or upon both.

They have also learned that they do not want to entrust their future relations with the Government to George Berry. All they have to do is to recall his meeting on Dec. 9 last year. No matter what announcement may be given out as the result of this year's Berry meeting—and it will probably be available before this issue reaches our readers—this much can be accepted as final: Berry will never perform a useful function as "coordinator for industrial cooperation"—and the sooner that fact is realized, the better.

Now, as to the positive lessons learned. After three and a half years of experience under code standards—part by statute and part voluntarily—this industry has become convinced, or rather re-convinced, that what it really wants is aid in supporting the industry's own self-government. That is what it got under NRA and, deny it or not, the textile industry did a swell job under that arrangement. It did a far better job than most industries because it was better organized to do so. It can do it again.

To make this more specific: The industry wants to be permitted to develop standards merely of minimum wages and maximum hours for employees—plus, in some of its branches, maximum hours for productive equipment; and then to be permitted to make those standards mandatory on all units engaged in textile manufacture.

Obviously, this last means that there must be enforcing power on the part of some governmental agency, plus supervisory power in the protection of the public interest. That is what we meant above when we said the industry wants aid in supporting its own self-government.

So, the next question is: Where shall that aid come from? There are really only two answers to this: One is the States, the other the Federal Government.

Industrial regulation by inter-State pacts is a popular idea right now. We'll hear a lot more about it during the next few months. Many people are sincerely in favor of it. Others are supporting the idea negatively—not with the hope of getting much out of it, but as a tactical means of averting Federal legislation. And that sort of an approach is hardly a constructive one, in such a vital matter as this one.

Personally, we think inter-State pacts are a delusion and a snare. We have discussed this subject in these columns previously, under the heading "Don't Leave It to the States!"

That brings us to the question of how Federal aid can be secured. This is where the best thinking of the industry should be directed. This is where the various associations can help through individual formulation of policy. This is where an informal coordinating council could be of major assistance by reconciling points of difference in these policies, so that the industry might present a united front. Never before have we encountered among individual manufacturers such an urgent desire for some declaration of policy. They want clarification of thinking in con-

nection with this fundamental issue, and their associations are the only source.

We do not believe anyone knows the best answer. There is a maze of legal and administrative complications which must be thought through. If, as some believe, adequate Federal aid can be secured merely by new legislation and not by a Constitutional amendment, that of course is the direction to follow. If, as others believe, an amendment is the only way out, then that avenue should be explored. *And industry should be the leader, not the follower, in the attack upon the problem.*

This subject is loaded—so we shall re-state what we are recommending: Federal legislation—with or without a Constitutional amendment—to insure, not Federal regulation of industry—but Federal support to self-government by industries themselves, with of course due protection of the public interest.

The answer must be found.

The Editor Says:

A Boom: Handle with Care!

THERE is no doubt that American business gets a good old-fashioned boom in its Christmas stocking this year. And this is no flash in the pan—but a sturdy boom which appears to have a year's wear in it, at least. Many of the heavy industries, despite recent progress, have still a long way to go before they can be called "normal." And they are on their way! So textile manufacturers, of course, can expect an increasing demand for their products, as these other fields catch up.

But, here's something to keep in mind: Some of this potentiality has been discounted. A part of the heavy buying in textiles this fall has been due to this, and to anticipation of rising costs. Unfortunately, no one knows just how large this speculative interest is. Due to the lack of integrated statistics, as pointed out by Robert West at the Cotton-Textile Institute meeting, textile manufacturers have to operate largely in the dark.

So the best they can do is to keep their "feel" with them. And one way to retain that is to resist boom hysteria.

We encounter two extremes of attitude in the textile markets today. One is based upon an apparent belief that permanent prosperity is here at last; that we can anticipate an ever-increasing demand for textiles; and that all our troubles are over. The other is the scared-to-death attitude. It is based on complete lack of faith in the soundness of the present recovery. It believes that any day now the whole thing is going to collapse, and we'll be groveling on bottom again.

It's a toss-up which attitude is the sillier. But the existence of both makes it all the more important for the rank and file to keep sane; to watch the situation carefully; to keep production and price policies within reasonable bounds—and, above all, to resolve now that at the first sign of reaction—which is bound to come sooner or later—they will not do the usual textile fade-out trick and offer the shirts off their backs in exchange for a few orders.

If they will resolve this, it will be Christmas for them all through 1937.

A Great Speech

EVERY little while, a speaker at a convention lifts his audience out of their chairs, and lifts the meeting out of the routine. It's a rare event—but when it happens, it's worth while. Possibly the outside chance of witnessing it is what keeps men going to conventions year after year. Something like the Irish sweepstakes.

Anyway, that was what happened at Pinehurst last month, at the annual meeting of the Cotton Manufacturers Association of North Carolina. Former Governor O. Max Gardner of that State did the unexpected.

It was not only what he said—although that certainly was important enough—but the way he said it. Seldom have we seen the conviction of sincerity pass so surely from speaker to audience. Within a few minutes he had his hearers spellbound, and held them so to the end.

He knew he was expressing ideas that were unpopular in some quarters. He knew that many of those present contributed toward the retainer fee which he gets from the Cotton-Textile Institute. But he refused to be a "yes" man. He told them what he thought they ought to hear, not what he thought they wanted to hear.

And, in reward, he got one of the best ovations we've ever seen in that type of convention. Participating in it were many who think differently from the way Gov. Gardner outlined.

That's the respect that true courage and true sincerity always draw out.

■

The Logical "Coordinator"

IN the editorial on the preceding page, we stated that textile manufacturers do not want to entrust their future relations with the Government to George Berry. The reasons are obvious. He is the president of a union and the leader of the embryonic labor party; therefore he is disqualified as an impartial coordinator of labor and management. In addition—if an addition is needed—his lack of poise and his prejudicial approach as exhibited at his abortive meeting last year, indicated how unreasonable it is to expect business men to cooperate with the Administration through him.

What, then, is to be the channel of such cooperation? In our opinion, the logical medium is the Business Advisory Council of the Department of Commerce. The Council has not earned the reputation for negative thinking which has made some other business organizations not too acceptable to the Administration. Furthermore, the Department of Commerce itself is the real business branch of the Government. Its Business Advisory Council, therefore, should be the point of contact between the two groups. The set-up seems to be an ideal one.

■

Funniest-News-Item-of-the-Month

"UNCONFIRMED reports in the Worth Street district yesterday were to the effect that Major Berry, Peter Van Horn and Chester Wright were collaborating on a proposed solution of textile ills to be offered as the high point of the coming Berry conference."—*Daily News Record,* Nov. 24, 1936.

Washington Again . . .

Interest in Capital returns as Congressional session nears

By Paul Wooton
Washington Correspondent,
TEXTILE WORLD

WASHINGTON matters of concern to the textile industry early in December, among others, were: Trade agreements, regulatory legislation, and taxation.

Trade Agreements

FAILURE OF VOTERS to respond to appeals to register their opposition to the reciprocal trade agreements is seen as evidence of a permanent change in tariff policy. The election probably means that there will be a great speeding-up of these agreements. The United States is in a poor trading position with Japan. No one is claiming that any trade agreement is likely to be negotiated with Japan that would be of substantial aid to the textile industry although some are hopeful that something may be worked out in other directions by the Murchison mission.

In the renewed activity in the study of trade agreements chief attention is being given Latin American possibilities insofar as textiles are concerned. There is a seasonal advantage in South America which opens possibilities for the sale of surplus stocks.

Also it has been demonstrated recently that intelligent advertising and energetic salesmanship can accomplish a great deal in Latin American countries. American-made surgical dressings are being sold in large volume and in increasing quantities as a result of smart merchandising. In the past there has been too much reliance upon agents. When a product is popularized it frequently can be sold in competition with lower-priced substitute materials. A brisk market for American denims and other work-clothing fabrics has been developed in South Africa and Australia despite the fact that the goods must be retailed at 75c to $1.00 a yard.

Regulatory Legislation

WHILE THERE IS little doubt that the Administration will make another attempt to secure some of the objectives of the NRA, the approach this time will be more cautious. From what is known at this writing it is believed that the general policy will be to have Congress lay down broad principles, leaving the detail and the actual regulation to the States.

This does not mean, however, that efforts will be abandoned to secure the passage of the Ellenbogen bill, proposing the creation of a national textile commission with broad powers over the industry. This measure was introduced by Rep. Henry Ellenbogen, of Pittsburgh, for the avowed purpose "of preserving the worth-while features of the NRA; of obtaining fair trade practices; of protecting the honest employer against the chiseler and cheater; of establishing minimum standards of labor and of eliminating competition among employers at labor's expense."

Mr. Ellenbogen emphasizes that his bill does not seek to regulate production, but to regulate distribution in interstate commerce. To accomplish this it would deny the use of the mails, the benefits of government contracts, purchases, loans, grants, or the privilege of registration of securities to any textile manufacturer who conducts his business in a manner contrary to the standards set forth in the bill. This bill with all its drastic features will be reintroduced when Congress meets.

Rep. Kent Keller, who probably will head the sub-committee on labor, which will consider the measure at the session, denies that there is objection to the collective bargaining phases of the bill except "from certain southern mill owners," but adds that to meet this opposition those provisions have been modified. Sponsors of the measure rely upon the operation of the Wagner-Connery act to effect their objectives.

Little weight has been given the fact that the textile industry already had cut hours from 52 to 40 weekly, and has raised wage rates sharply.

It was pointed out by Dr. C. T. Murchison at the last session that the measure would put the textile industry into a strait jacket and prevent real progress. The child labor provision of the proposed legislation, he said, simply "is dragging up the old skeleton of child labor, at which any mill man would laugh, as they all know that employment of workers under 16 is a losing proposition in general." Dr. Murchison also warned that artificial increase in wages means still greater loss of export trade, already cut to the bone. He said passage of the Ellenbogen bill would lop off 25,000 textile workers from the payroll.

Taxation

REVISION of the tax law so as to encourage expenditures of an employment-making character is more likely now that Senator Pat Harrison, chairman of the Finance Committee, has revealed that he favors such amendments. In taking this position he comes to the support of Jesse Jones, chairman of the Reconstruction Finance Corporation, who has been a consistent advocate of such a policy. The taxpayer should be encouraged, Chairman Jones says, "to improve plant and equipment, thus stimulating capital goods and the employment of labor."

Because of the support he is receiving from so powerful a figure as Senator Harrison, there is renewed interest in the campaign Chairman Jones has been waging for tax law revision.

Since Mr. Jones has been in intimate contact with a large number of concerns that have weak capital structures, he is in a good position to understand their problems. He thinks the tax law should be amended so that concerns laboring under debt will pay only normal taxes until previously incurred indebtedness is liquidated.

Windfall Tax

TEXTILE COMPANIES, hardly noticed in the windfall tax procession by the legal division of Bureau of Internal Revenue, apparently are having less trouble with their "unjust enrichment" than the packing and milling interests.

No textile cases have got as far as the legal department because, in counsel's opinion, textile companies had usually clearly written 90 and 120-day refund clauses in their sales contracts.

This does not mean, however, that textile companies are not coming to the division of rules and regulations for decisions. In fact the division is receiving masses of documents as evidence for credit against the tax on the impounded tax.

Several vendors in the packing and milling industries are suing processors for refund, but the legal department believes no opinions have been handed down as yet by the courts.

Bureau of Internal Revenue specialists say windfall taxes are the most complicated levies ever enacted. Making the returns, due Dec. 15, for which forms went out a month previous, is giving attorneys and accountants much trouble. Revenue agents' heads are throbbing too as accounts of manufacturers split into hundreds of smaller ones as they descend through the substrata of jobbers, wholesalers and retailers. Returns on all of these have to be checked, though they taper off to a nickel. The attitude at Internal Revenue is one of liberality but they will not disclose their recent rulings.

World Textile Conference Scheduled

THE International Labor Office at Geneva has accepted an invitation issued by President Roosevelt to attend a world textile conference at Washington next April (probably about Apr. 5). All the leading textile countries have been invited to send delegates representing government, employers and workers respectively. The idea of the conference was first suggested by John G. Winant, chairman of the Social Security Board, at the labor meeting in Geneva last June, and it was reported in this column last month that such a conference was about to be scheduled for next spring. In well-informed quarters it is stated that, if the 40-hr. week for textile operatives is on the agenda, the conference is foredoomed to failure since many countries of the world would not join the United States in that standard. Despite that obstacle, the International Labor Organization feels the conference will be one of the outstanding events of recent years.

The broad purpose of the meeting is "to consider all those aspects of the textile industry which directly or indirectly may have a bearing on the improvement of social conditions in the industry."

Pacific, Chicopee Take Parts of Amoskeag

MANCHESTER, N. H., perked up perceptibly on Nov. 17, when it was announced that Pacific Mills had leased the Amory, Bag, Langdon, and Jefferson units of Amoskeag and expected to employ up to 2,500. The units involved have 135,000 spindles, 1,300 looms, 1,186,000 sq. ft. of floor space and are set up to manufacture print cloths. In addition, Pacific purchased 1,700 looms from other sections of Amoskeag and will install them in the leased mills. It is understood that the deal covers a three-year period and that Pacific will make some permanent arrangement if the trial period shows that operations can be carried on profitably; otherwise the machinery could be moved elsewhere.

William Lang will serve as superintendent of the new units, under the supervision of Irving Southworth, general agent of Pacific. Finishing will be done at the Lawrence plant, which has ample capacity. In the past the company has acted as a converter as well as a manufacturer, producing less than half its gray goods requirements. Counting the new units, Pacific now has 525,000 spindles.

There was further reason for Manchester to cheer when it was announced on Dec. 3 that Chicopee Mfg. Co., a subsidiary of Johnson & Johnson, New Brunswick, N. J., had leased No. 4 Central Division and would employ 600. Chicopee has purchased considerable equipment from other sections of Amoskeag to equip the unit for spinning and weaving.

Not Represented at Berry Meeting

THE textile industry proper was not officially represented at the Berry conference in Washington on Dec. 10. It was understood ahead of the meeting that the Cotton-Textile Institute felt the situation to be unchanged from that of a year ago when the Institute declined a similar invitation. In the meantime the industry has been putting its house in order, maintaining code wages and hours and working toward other ideals of industrial betterment. Evidence of success of the efforts is given in the recent general wage increase. Belief was held that no added good could arise from attendance at the Berry conference. Other major units in the industry were also not represented.

Skilled Labor Scarce

METHODS of insuring an adequate supply of skilled labor held the center of the stage at the industrial session of the twelfth New England Conference, held in Boston Nov. 19 and 20. Of particular interest to textile men was the address of E. I. Peterson, superintendent of the Bigelow-Sanford Carpet Co., Thompsonville, Conn., in which he told of his company's experience with an employee training school. The Bigelow School of Craftsmanship (described in TEXTILE WORLD, January, 1936) was started in a depression year, according to the speaker, because it was realized that when business did come back there would be need for better workers and for more overseer material. Mr. Peterson pointed out that the number of mills utilizing some training plan has increased markedly during the last year.

Improvement in Last Half of 1935 Noted

COTTON textile manufacturers who are not already aware that they fared a little better in the last half of 1935 than in the first half of that year will be excited to learn that the Federal Trade Commission has so discovered. Its latest report on its investigation of the textile industry shows that combined spinning and weaving companies, the most important group in the cotton textile division, had an average return of 0.63% for the last six months of 1935 as against an average loss of 1.63% for the first half of the year. Spinning companies reported an average return of 1.5% against an average loss of 1.4%. Dyeing and finishing companies reported a return of 0.63% against a loss of 1.01%. Weaving companies, on the other hand, earned 0.32% in the last half of 1935 as against a return of 0.81% during the first half of that year.

Staple Rise Puts Japan 1st in Rayon

JAPAN'S rayon production for 1936, including filament and staple, will total approximately 325,000,000 lb., giving that country world leadership in total rayon output, according to the December *Rayon Organon*. Stanley B. Hunt, *Organon* editor, estimates Japan's yarn total at 275,000,000 lb., and staple fiber at 50,000,000 lb. He comments: "These are tentative figures but are reliable enough to establish the fact that in 1936 Japan will have passed the U.S. as the world's largest rayon producer, a position which has been held by the U.S. since the World War."

The *Organon's* figure, 275,000,000 lb., for Japan's filament rayon, tallies exactly with TEXTILE WORLD'S estimate for United States 1936 production published in our Rayon Issue in September. At that time, we placed U.S. staple-fiber total at 12,000,000 lb.; it is increased output of staple therefore that gives Japan world leadership in total production.

Crush-Resist Velvets Molyneux Choice

INCREASED importance of wool in the formal evening wear field, and a wider use of crush-resist velvets in all apparel fields are highlights of the current Paris fashion picture, according to Capt. Edward Molyneux, well known fashion designer of Paris and London. Interviewed during his current visit to New York, Capt. Molyneux cited his new formal velvet-lined wool cape, shown elsewhere in this issue, as indicative of the new trend. Discussing the application of the crush-resist process to velvets, he said he considered this development to be of major significance in extending the apparel market for pile fabrics.

Textile Personalities

JOHN K. VOEHRINGER, JR., president of Mock, Judson, Voehringer Co. of (Greensboro) N. C., is hardly 40 years old, and appears much younger. His company is hardly 10 years old, and appears much older—in

John K. Voehringer, Jr., the youthful president of Mock, Judson, Voehringer Co., of Greensboro, N. C., who entered the hosiery business when 15 years old.

fact, the continuous growth and expansion of the mill is a story within itself. But this is about Mr. Voehringer, and not about his business.

Entering the hosiery business at the age of fifteen via Henry Leymouth Co., young Voehringer had no technical training, no higher education, and no family mill interest to help him along. Probably, he found the going pretty tough at times. Despite the obvious handicaps connected with this period of apprenticeship, he managed to attend Wharton Evening School of the University of Pennsylvania, and there secured somewhat piecemeal his formal education.

The next step was a connection with Oscar Nebel Co. which ultimately developed into the position of secretary and treasurer. Mr. Voehringer served in this capacity until the firm was purchased in 1925 by Gotham Silk Hosiery Co. Deciding the time was ripe to go into business for himself, he formed the Mock, Judson, Voehringer organization and moved to Greensboro where he has lived since. In addition to directing the production and expansion of the hosiery company, he heads the newly organized Carolina Webbing Co., Greensboro, makers of elastic webbing for use in hosiery, underwear and overalls.

Mr. Voehringer likes golf, fishing, and bridge when he can find time for such recreation.

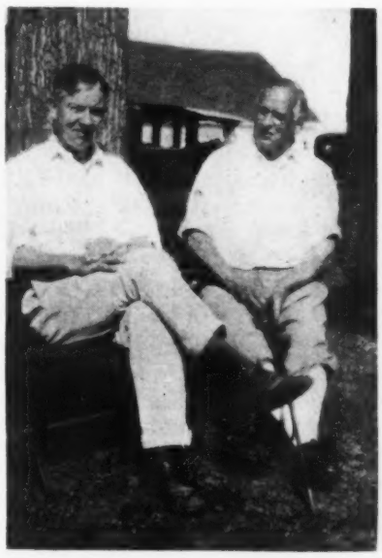
PRESIDENT Charles H. Eames and the alumni of Lowell (Mass.) Textile Institute are justly proud of the fact that their institution has achieved courses of college standing and has recently been privileged to confer Master's degrees. In fact TEXTILE WORLD has to be very careful of one of the indications of this growth. If we should (as we did once) refer in print to Lowell Textile *School,* the old and less dignified name, alumni all over the country would grind their teeth—to say nothing of the horrible tantrums of that particular alumnus who is a member of our editorial staff.

To get back to Mr. Eames, who has been a guiding spirit during the later years of development of Lowell Textile, he was born in Andover, Mass., was graduated from Massachusetts Institute of Technology, in 1897, with the degree of Electrical Engineer, and went to work at a light, heat, and power plant in Milford. His first indirect contact with Lowell Textile was when he was made superintendent of a block plant that supplied light, heat, and power to the school, which was then located on Middle St. Later he went with Stone & Webster on power-station work. In 1904 he joined the staff of Lowell Textile as instructor in mathematics, physics, and electrical engineering. In 1906, he was appointed principal, and when the State took over the institution, in 1919, his title was changed to president.

Mr. Eames says that he gets the exercise others secure from golf by working on the lawn and shrubbery at his home in Billerica, where he has been a moderator since 1913. He is a trustee of Rogers Hall, a girl's school, and a vice-president of the Central Savings Bank.

President Eames caught at the portal of Lowell Textile Institute

MAYBE it's a case of dual personality. Or maybe its just keen business adaptability. Anyway, the fact remains that G. F. Earnshaw has successfully combined two textile careers which usually are separate and distinct.



A TEXTILE PAIR—G. F. Earnshaw, of Earnshaw Knitting Co., (right), and his life-long friend, the late Chas. J. Nichols, of Boston.

He is both a manufacturer and a publisher.

It came about this way: Formed in Chicago in 1911 and later moved to Newton, Mass., the Earnshaw Knitting Co. specialized in a new type of infants knitwear, styled to fit without buttons or pins. At that time retailers were sluggish in merchandising infants' wear, and Mr. Earnshaw embarked upon a vigorous promotion campaign which in 1917 was expanded to include a house organ devoted to infants' wear retailing and child hygiene education.

In 1920 the publication was put on a commercial basis; it became self-supporting almost immediately. Today Mr. Earnshaw devotes 75% of his time to the thriving firm of Earnshaw Publications, which include *Earnshaw's,* the magazine property, and a trade directory; he also serves in an advisory capacity to his knitwear business.

The accompanying picture, showing Mr. Earnshaw on the right seated beside the late Chas. J. Nichols, tells a story of a lifelong friendship between two well-known textile men. Mr. Nichols founded and developed Nichols & Co., worsted top-makers, Boston, to a foremost position in that field in prewar days; he served as Wool Administrator in the World War. He died Feb. 11, 1929. This photo, taken in 1927 at Mr. Nichols' New England home, is one of Mr. Earnshaw's most cherished possessions.

Japan Ho!

Cotton textile mission leaves San Francisco Christmas Eve

ANNOUNCEMENT of the personnel of the group of cotton manufacturers who will go to Japan to seek a solution of the Japanese cotton imports problem was made Nov. 19 and was followed by sympathetic endorsement of the idea from two high-ranking officials of the Japanese government in this country.

The group will be headed by Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, and will include Donald Comer, president of the Avondale Mills in Alabama and president of the American Cotton Manufacturers Association; Cason J. Callaway, chairman of Callaway Mills, La Grange, Ga.; Harry L. Bailey, president of Wellington Sears Co., New York; and Hervey Kent, treasurer of Exeter (N. H.) Mfg. Co. The group sails from San Francisco Dec. 24 and will spend about two weeks in Japan, returning to United States early in February.

The above plans were announced by Dr. Murchison following his address at the American-Japanese Trade Council Session of the National Foreign Trade Convention in Chicago. Seijiro Yoshizawa, Counsellor of the Japanese Embassy at Washington, presiding over the session, expressed gratification that the problem is "to be approached from an entirely new angle." "Of course, we cannot at present be optimistic about the outcome of such conversations," he added, "yet it is conceivable that such a meeting of two groups around a table will produce a result beneficial to the adjustment of the existing differences between the textile industries of the two countries."

The very day after Dr. Murchison's announcement, Hirosi Saito, the Japanese Ambassador, added his sympathetic comment. Speaking at the sales conference dinner of Pepperell Mfg. Co., in New York Nov. 20, Mr. Saito said: "I understand some of you will be proceeding to Japan shortly for an informal conference with Japanese business men for the purpose of adjusting certain commercial differences. Such a meeting will surely be of great significance because personal contact will beget understanding, understanding will beget sympathy and sympathy will beget accommodation. Where there are understanding, sympathy and accommodation, adjustments will be worked out."

MURCHISON

COMER

CALLOWAY

BAILEY

KENT

Approved unofficially by both governments, the mission hopes to achieve a mutual understanding by the United States and Japanese industries of their respective problems which can ultimately be translated into a practicable, voluntary agreement by the Japanese to establish their cotton goods shipments to this country on reasonable bases.

Discussions between the two industries were first proposed by Dr. Murchison last spring following the collapse of diplomatic negotiations for a "gentlemen's agreement" initiated by the State Department. The failure to obtain an agreement was attributed in some quarters to misunderstanding of the problem by the Japanese industry and the result was the presidential order, effective June 20, increasing duties on certain cottons by an average of 42%.

The growing conviction, in the light of experience since the tariff increase, that any protection available under existing law would be ineffective against the wide disparity between Japanese and United States labor and other production costs, as well as realization both here and in Japan that the only alternative to voluntary action by the Japanese may be definitely discriminatory legislation by Congress, stimulated interest in the proposed mission.

THAT'S PROGRESS!

ANYONE who doesn't believe the textile industry has made progress in its thinking during recent years might consider the wage increases which have been put into effect during the last month.

In the old days, a wage increase was something to be shunned like Satan. It was considered all evil, and the longer it could be avoided, the better. Weeks, and even months, would pass between the time it first became apparent that a higher scale was in order, and the time it went into effect. In the interval, hard feeling was engendered between employers and employees, so that the eventual increases produced none of the good will which should go with such action.

This time, the delay was insignificant—and the action clear-cut and decisive.

Skeptics will point out that manufacturers were busy, with orders booked well ahead, and did not want to take a chance on any interruption. As a realist, we know that this consideration entered in. Nevertheless, we have seen the same situation exist in past years, without the same action being taken. In other words, this is our old friend "enlightened self-interest"—and the bigger the dose of it the industry gets, the better for all concerned. It's more permanently helpful than all the philanthropy that could ever be built up. It's what makes the wheels go round.—*Editor.*

Wage Increases

Sweep through textile industry like wildfire

ALMOST over-night the wage level in most branches of the textile industry was advanced approximately 10%. This development, although foreshadowed, came with a suddenness and a unanimity seldom experienced in this industry. About all it took for a starter was action by a few mills—and then the parade began. Major causes were: improved business, which means that, for the first time in years, mills can afford to increase wages; higher living costs; and, in some cases, shortage of skilled and semi-skilled labor.

Brief summaries of the action taken by the various branches of the industry follow:

Cotton

Wage increases said to approximate 10% spread like wildfire through the cotton-textile industry in November. Beginning with scattered 5% increases and "restorations" of wages, it was not long before payrolls all over the textile area were moving upward. The way the mills have fallen in line is a dramatic proof that improved business is the best cure in the world for low wages, and that it can affect wage structures in a way which legislation or union demands could never hope to do.

Incidentally, it might be well to mention here that southern manufacturers emphatically deny that union demands had any influence whatever on the decision to fatten payrolls.

In New England, one can start up at Augusta, Me., drop down through Lewiston and Biddeford, pause at Nashua, N. H., cross the line to Salem, Mass., swing down to New Bedford and Fall River, and then cross over through Rhode Island and eastern Connecticut, and at every stop it is the same story of a wage increase averaging 10%. Finding a cotton mill in New England that hasn't raised wages would be news today.

The situation is not nearly as clear in the miscellaneous textile plants making small wares. Some manufacturers have gone ahead and granted increases while others hang back. It is believed, however, that the laggards will be forced into line by public opinion.

Wool

Stillwater Worsted Mills showed up in front by announcing a wage increase on Nov. 9 and Collins & Aikman and Wanskuck Co. were close behind, but the really impressive parade took place on Nov. 12 when such concerns as American Woolen, M. T. Stevens, Uxbridge, Forstmann, Cocheco, Arlington, Bell, Hayward-Schuster, and numerous others announced that pay envelopes would be fatter starting with the week of Nov. 23. The most common procedure was a flat 10% increase all along the line. In Woonsocket, the Independent Textile Workers union threatened to call a strike if the workers were not given a 12½% raise, but agitation quieted down when manufacturers put through a 10% increase. This union is not to be confused with the United Textile Workers, which continues to mumble about a boost of 20%.

Manufacturers have been greatly encouraged by the broad response on the wage question. At the start a number admittedly feared that they would be placed at a disadvantage in competition with mills that clung to the old level, but as the news poured in from both the large cities and the small country towns it became apparent that the industry was really pulling together. Firms that have not changed their wage schedules for one reason or another are decidedly in the minority.

Rayon-Silk

Recent weeks have brought a definite upward trend in wages in the rayon yarn industry. Since early November various leading firms announced increases and others are falling in line. The Viscose Co. made public an advance of 5%, effective Nov. 30, and applicable to all plants, comprising a personnel of about 17,500; this followed a 5% raise last July, totalling 10% in 5 months. An increase of 7% to 10% was announced by the rayon division of E. I. du Pont de Nemours & Co., for employees of the Richmond, Va., and Waynesboro, Va., plants. Other rayon firms have revised wages upward without public announcement.

In the silk division of the rayon weaving industry wages have been increased in a few cases; the larger companies are studying the situation with a view to action. They are hesitant to advance wages until they have reasonable assurance that the advance will be followed by smaller mills who otherwise would enjoy a decided competitive advantage on costs. In the rayon division of the weaving industry wages have been advanced by most companies.

Knit Goods

Hosiery: Wage raises so far have been restricted to a few isolated cases. Hosiery manufacturers generally are studying the cost-price situation, with a view to determining how their present unprofitable business status can be adjusted to conform to the upward wage trend in other branches. Earl Constantine, managing director of the National Association of Hosiery Manufacturers, addressing the association's board of directors Nov. 12, stated that "an industry, whose commodities have shown a material increase in recent weeks with none of this reflected in higher prices, is in no condition to discuss increases in wages."

Underwear: No general action taken. Underwear manufacturers are giving close attention to the wage issue, but they are sold far ahead at current prices which do not allow for increased costs.

Outerwear: No general advance. Wages have risen in some sections of the country and fallen in others. Harold R. Lhowe, managing director, National Knitted Outerwear Association, comments that "in rural sections outerwear wages have receded and competition of these sections has had a tendency to keep urban wages in the industry from advancing."

Finishing

Companies in the cotton finishing industry in general have or will grant wage increases averaging 10%. In the silk and rayon branch, the employers and union signed a 2-yr. contract, effective Aug. 31, with the union. This called for a continuation of minimum wages of 60c. an hour for men and 48c. for women, the same rates as had prevailed for the preceding 2-yr. period. Wages in that branch are still higher than in the cotton branch, and any increase seems unlikely.

Third-Shift Menace

Attacked by Gov. Gardner at N. C. Manufacturers' meeting

IF the convention of the Cotton Manufacturers Association of North Carolina, held at Pinehurst, Nov. 5 and 6, was any criterion, the textile industry is not allowing current prosperity to obscure the necessity of facing the vital problems ahead. At that meeting, not only did Harvey W. Moore, president of the association, insist that continued compliance with code labor standards is the only method of insuring continuance of prosperity, but O. Max Gardner, counsel for the Cotton-Textile Institute and former governor of North Carolina, made an impassioned plea for continuance of the two-shift limitation on productive machinery.

Gov. Gardner's talk was the most dynamic speech heard in textile circles in a long time. "I am going to talk frankly about what I think, and not to please you," he began. "My subject is 'The Menace of the Third Shift.'"

Pointing out that the cotton-textile industry is showing evidence of getting on its feet again for the first time since the summer of 1933, Governor Gardner declared that "in his judgment the present position of the industry is due in a large measure to the imposed lessons it apparently learned in the kindergarten days of its operations under the unconstitutional National Industrial Recovery Act." He went on to say that the day we deviate from this sensible schedule (two 40-hour shifts per week) will mark the fall and decline of the industry, and inevitably will invite "regulatory legislation that will be both constitutional and infinitely more repugnant to you than anything that has yet been enacted into law by the Federal Government."

"I cannot believe," he added, "that the majority of the industry is going to be content to stand aside and continue operations on two shifts while permitting a minority to enjoy temporary advantages resulting from third-shift operation."

Continuing in this vein, Governor Gardner cited the rayon-weaving industry as "a fine example of the perils of the third shift." "It makes both my pocketbook and my heart sick," he said, "to see the third shift of the rayon weavers turning out millions of yards of dress goods today and selling these desired materials at a price insufficient in many instances to cover the cost of labor and material!"

"The 40-hour week," he continued in part, "is the Magna Charta of the economic and social rehabilitation of the cotton-textile industry in this nation. . . . The law of Congress is dead but the vital principles of NRA have in effect become the law of this land. . . . This advance will not be abrogated or abandoned. . . . The man who thinks this country will revert to so-called rugged individualism, and that one State will be permitted for any length of time to operate machinery 50 or 60 hours a week, as in the past, is more than blind. . . . The man who cannot give up his preconceived local prejudices on this point has played his last game, and is headed for the sidelines!"

Governor Gardner warned in conclusion that "the police power of the Federal Government will surely intervene if we continue the policy of pursuing our legal rights to do wrong to our own self-interest and to the ultimate interest of those who manipulate our machines, and this intervention will be in the name of social justice and not in the name of the rights of private property."

Moore Urges Code Compliance

Harvey W. Moore, president of the association, confirmed Governor Gardner's stand by stressing in his annual address the importance of maintaining the basic principles of NRA as embodied in the compliance pledge of the industry. The principal arguments supporting the program were reviewed as follows:

1. It (compliance) will prove the safest guarantee and defense against threatened radical legislation for Government regulation of the industry.
2. It will check over-production, stabilize operations, and afford mills a better opportunity for profits through the elimination of cut-throat competition.

Mr. Moore added that the mills in North Carolina have generally lived up to the Cotton-Textile Institute pledge in that 87.78% of the spindles are conforming, according to latest reports, as compared with 76.61% in the South as a whole.

Other matters reported on by President Moore were national and State legislation, traffic department, and the safety contest sponsored by the association.

In connection with national legislation, he discussed the windfall-tax situation, the Robinson-Patman Act, the Walsh Healey Act, the Court decision on AAA, etc. As to State legislation, there have been no important developments in North Carolina this year as the General Assembly does not meet until January. However, he mentioned the 40-hour law passed in South Carolina effective when adjacent States adopt similar laws. There is expected to be considerable opposition to such a law in North Carolina. Social security measures will be an issue in the next Assembly.

MANY EXCEPTIONAL records were made in the safety contest conducted by the Cotton Manufacturers Association of North Carolina in cooperation with the State Industrial Commission. Some 171 mills with 59,742 employees participated in the contest which extended from July 1 to Oct. 15. The contestants were grouped according to number of employees as follows: Group 1, 350 employees or less; Group 2, 350 to 750 employees; Group 3, over 750 employees.

Dutchess Fabrics Corp. (Burlington Mills) was winner of Group 1 with 164,179 man-hours. Erwin Cotton Mills Co. (Sewing Room & Bleachery) was winner of Group 2 with 315,421 man-hours. Revolution Cotton Mills was winner of Group 3 with 668,954 man-hours. Of the 171 plants competing, 56, with 12,789 employees, operated the entire period of the contest without a single lost-time accident.

Association executives with Dr. Murchison at Pinehurst meeting Nov. 6. Left to right: Hunter Marshall, secretary, Arthur K. Winget, elected first vice-president, Dr. C. T. Murchison, Harvey Moore, retiring president, and Herman Cone, newly elected president.

A final matter discussed by President Moore was a new project sponsored by the association which consists of equipping a room at Stonewall Jackson Training School with textile machinery. Details of the progress made in this direction were later described by Thomas A. Nelson, dean of the North Carolina State College textile school, who is helping get the work started.

Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, briefly discussed the progress made by the Institute in its plan to raise money to develop new uses of cotton by collecting lc. per bale from both mills and shippers. He also reported the latest developments in the attempt to make universal the use of cotton bagging for bales.

The convention was further featured by a detailed discussion of taxation problems by A. J. Maxwell, commissioner, Internal Revenue Department, Raleigh, N. C., and by Bernard Cone, chairman of the taxation committee.

Mr. Cone discussed in great detail the problems relative to the "windfall tax." He said in part:

"Just now to compute these windfall sales presents a rather difficult and involved problem in accounting, and one which to be solved accurately is going to require the services of a pretty competent accountant.

"In the first place, most of us have no April 1 inventories, so have no direct record of the tax-paid cloth and stock in process on hand at that time out of which April, May and June sales were probably made. For those mills, it will have to be worked backward from Dec. 1 inventories."

The remainder of Mr. Cone's speech dealt largely with detailed methods of calculating the tax, although he interpolated many humorous but pointed jibes aimed at those members of the Administration who originated and administer the tax.

The final speaker on the more formal part of the program was H. W. Culbreth whose subject was "The Credit Union."

In addition to the usual committee reports, Marion Heiss, of Greensboro, described the safety contest sponsored during the last year by the association. Details are given at the bottom of second column in this article.

Three important resolutions were adopted:

1. The Department of Agriculture and Congress were requested to take necessary steps to insure cotton being sold net weight.

2. Manufacturers were urged to continue maintenance of the standard of operations set forth by the American Cotton Manufacturers Association on June 7, 1935.

3. The severity of the sur-tax on undistributed profits was protested, and Congress was asked to consider "outright repeal or at the very least revision of Section 14" so that profit can be used to replace obsolete machinery, pay loans contracted during depression, and rebuild reserves to a point of reasonable safety.

Officers were elected as follows: Herman Cone, Greensboro, president; A. K. Winget, Albermarle, 1st vice-president; J. Harvey White, Graham, 2d vice-president. Hunter Marshall, Charlotte, was reelected secretary-treasurer. John F. Matheson, Jr., Mooresville, and C. E. Neisler, Jr., Kings Mountain were elected to the board of directors to succeed Messrs. Winget and White whose terms had expired. Other directors chosen to serve until 1938 were Luther H. Hodges, Spray; R. L. Harris, Roxboro; W. H. Entwistle, Rockingham; P. H. Hanes, Winston-Salem; A. M. Dixon, Gastonia, and R. C. Moore, Asheboro.

Thomas Webb, former president of the American Cotton Manufacturers Association, presented a medal to the retiring president, Mr. Moore.

The annual banquet was held Thursday evening preceding the business session, with David Ovens, former president of the National Retail Dry Goods Association, as guest speaker.

Honor guests invited to the banquet were Dr. Claudius Murchison, Donald Comer (absent), W. Ray Bell, A. J. Maxwell, O. Max Gardner, Mrs. J. W. Cannon, C. E. Hutchison, A. M. Fairley, C. W. Johnston and Mrs. McLaurine, the mother of W. M. McLaurine.

Golf matches were in charge of J. D. Sandridge, E. I. du Pont du Nemours & Co., who also presented the prizes.

The Corn Products golf trophy was won by A. G. Myers, the Pinehurst trophy for the second time by W. H. Ruffins, the association trophy for low net score by K. P. Lewis, and the low gross by J. S. Braswell. Association trophies for the allied industries were won by Carson Rose, low net, and J. J. Mitchell, 3d, low gross.

Underwear Facts . . .

Comprehensive survey highlight's industry's 1937 problems

A DECADE of steady, if at times difficult progress along circumscribed lines guided by an essentially conservative management policy—such is the picture of the underwear and allied products industry between 1926 and 1936 which is presented in a study of the industry just made public by the Underwear Institute. The report, entitled "Business-Building Facts," was compiled and written by Francis E. Simmons, research director of the Institute, and represents the results of a comprehensive survey in which 577 companies operating 606 mills cooperated. The text is supplemented by many charts and tables, including the inventory guide shown below.

The report comprises a statistical study which has two main divisions, (a) production or supply; and (b) selling, or meeting demand. While factual rather than interpretive in approach, it does direct attention to various trends and problems demanding immediate consideration by the industry in its plans for 1937. Among the major recommendations are: (a) increased merchandising effort, particularly as regards styling, development of new and improved products, and market expansion; (b) continued emphasis on cost finding; and (c) the need for maintenance of profitable prices.

The body of the report is replete with significant data. Statistics indicate that the industry is, in certain respects, virtually on a par with its pre-depression position. Production, which totalled 39,680,000 doz. in 1927, fell to 34,954,000 doz. in 1934, but rose again to 39,735,000 doz. in 1935. Employment in the industry, during the first nine months of 1936, was 99% of the 1929 average. The decade brought fundamental changes in product types, chief of these being the trend from one-piece or union suits to two-piece or shirts-and-shorts combinations. For all lines, production per capita of population was 4.0 pieces or 2.8 complete units in 1927 against 3.7 pieces or 2.3 units in 1935. This drop, Mr. Simmons comments, shows need "for more intensive promotion."

Selected at random from the report, a few significant points on market trends are: The industry has been deficient in developing new or improved products. The chief innovations in the period were women's woolies or "snuggies" and men's knitted trunk shorts. Pointing out that the Institute's prediction in 1935 of increased call for the new shorts was confirmed this year despite doubts of many skeptics, Mr. Simmons cites the comments of the doubters as "illustrating the unwarranted bearish attitude of manufacturers toward new ideas." The inclination of underwear mills toward outerwear products has been evidenced in their increased production of polo shirts. The rise in circular knit rayon activity is quite striking. Figures show that this production has increased to the point where it comprised 25% of all underwear, knit or woven, and 33⅓% of knitted underwear in 1935. Further on, the report states that rayon underwear tubing output rose some 300% between 1929 and 1935; this growth, all but 9% of which is in women's garments, has cut substantially into women's knit cotton underwear.

The chapter on regional shifts is timely and interesting. Current distribution of mills shows that two states —New York with 34.5% and Pennsylvania with 2.6%— jointly represent more than half the industry. A survey made among 165 companies, totalling $85,000,000 sales annually, shows that there has been a substantial shift in mill location from the North to the South. In 1929 the South had 11.4% of national sales of this group, whereas today the South has 17% to 18% of the sales quota. This was chiefly at the sacrifice of New England.

Abstracting further from Mr. Simmons' presentation:

Equipment: The industry's productive equipment now totals 30,000 knitting machines and 60,000 sewing machines, plus an indeterminate total of spinning equipment. The knit cotton-wool division has more than half the grand total of knitting and sewing equipment and the knit rayon-silk division comes second.

Cost-finding: The story of the Institute's work on cost-finding, in which it pioneered as far back as 1918, makes an impressive record. With seven important cost-finding surveys to its credit, the organization now has an additional nine surveys, either in progress or planned.

Labor: Average monthly employment fell from 64,000 in 1929 to 53,000 in 1932, rising to 59,400 in 1935. Payrolls dropped from $51,000,000 in 1927-29 to $31,000,000 in 1932, rising to an annual rate of $45,000,000 in 1936. On wages: weekly earnings in the knitted cotton-wool underwear mills now average $14.75, which is the highest in the industry. With respect to the much-mooted North-South wage issue, the report shows that in May, 1935, Southern mills averaged $11,89 weekly which rose to $12.64 in May 1936, while Northern mills averaged $13.75 in May 1935 against $14.43, in May, 1936.

Inventory: Turnover in the industry rose from 6.5 in 1934 to 7.4 in 1935, while stocks showed a 4.4% drop between 1933 and 1934 and a 8.8% drop in the year following. Standardization of sizes aided this reduction.

Mr. Simmons concludes with a strong plea for closer study of sales trends and market needs. As a whole, the report is an enlightening and competent record, well meriting the comment of Roy A. Cheney, managing director of the Institute, who terms it, "the most comprehensive analysis of the industry ever published."

RATIO OF UNDERWEAR STOCKS TO UNFILLED ORDERS

Month End	Knit Cotton/Wool: Heavy Weights	Knit Cotton/Wool: Light Weights	Circ. Knit Rayon/Silk: Full Process	Circ. Knit Rayon/Silk: Cut & Sewn	Warp Knit Rayon/Silk	Woven Cotton Athletic
	For Each 100 Units of Unfilled Orders, Mills Held the Following Average Number of Units of Stock:*					
Jan.	280	80	380	268	294	109
Feb.	175	90	278	251	223	115
Mar.	115	90	313	248	188	130
Apr.	145	100	458	288	229	150
May	70	110	503	292	277	192
June	90	110	535	303	433	231
July	90	115	431	283	280	335
Aug.	120	130	249	235	229	301
Sept.	140	130	235	205	184	312
Oct.	140	90	139	220	188	169
Nov.	170	70	208	302	305	112
Dec.	290	60	580	393	517	116
Monthly Average..	152	92	359	274	279	189

* Each month's average is based on experience for that month over a period of three years ended August 1936. The General Average is the monthly average for the 3-year period, not the average of the monthly averages.

Source: U. S. Bureau of the Census.

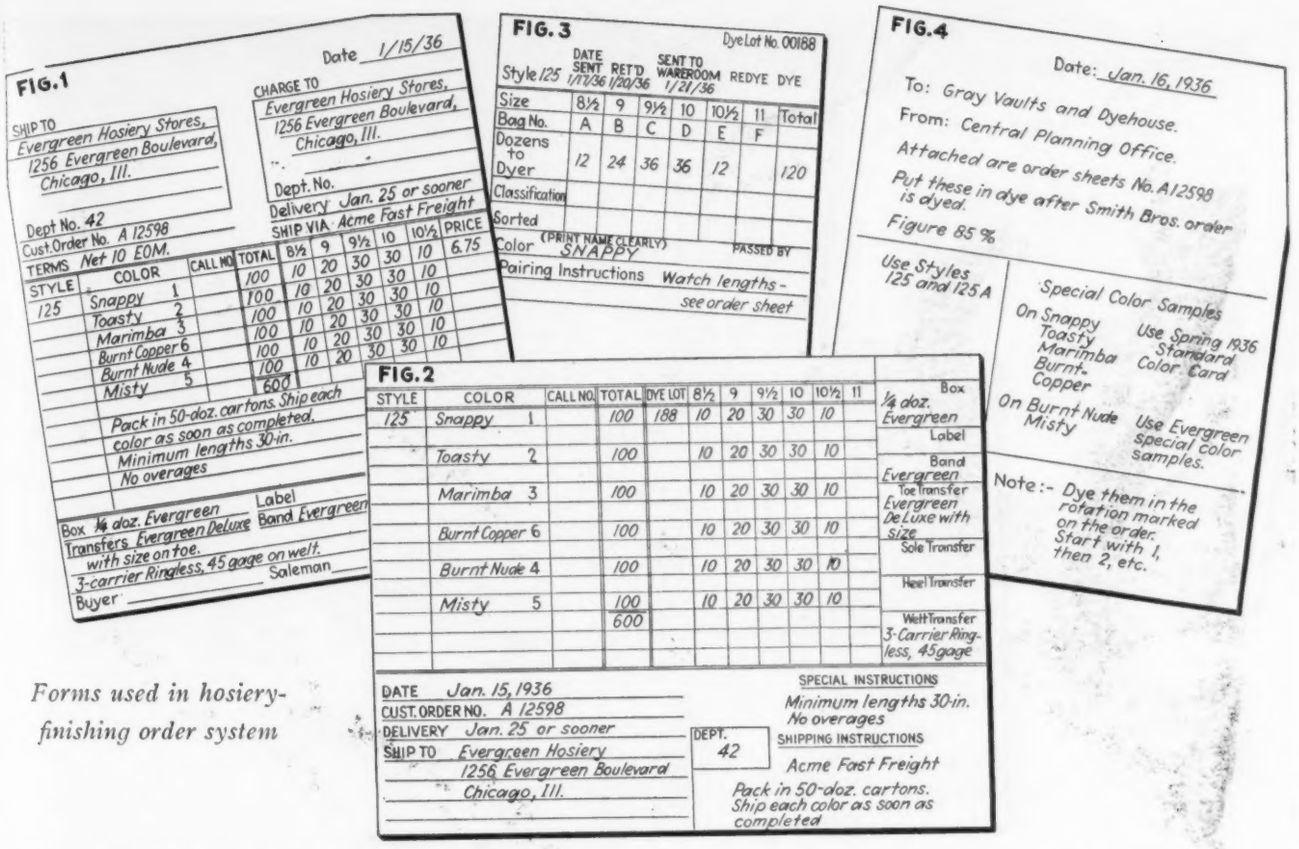


FIG. 1

Date 1/15/36

SHIP TO
Evergreen Hosiery Stores,
1256 Evergreen Boulevard,
Chicago, Ill.

CHARGE TO
Evergreen Hosiery Stores,
1256 Evergreen Boulevard,
Chicago, Ill.

Dept. No. 42
Cust. Order No. A 12598
Dept. No.
Delivery Jan. 25 or sooner
SHIP VIA Acme Fast Freight
TERMS Net 10 EOM.

STYLE	COLOR	CALL NO.	TOTAL	B½	9	9½	10	10½	PRICE
125	Snappy 1		100	10	20	30	30	10	6.75
	Toasty 2		100	10	20	30	30	10	
	Marimba 3		100	10	20	30	30	10	
	Burnt Copper 6		100	10	20	30	30	10	
	Burnt Nude 4		100	10	20	30	30	10	
	Misty 5		100	10	20	30	30	10	
			600						

Pack in 50-doz. cartons. Ship each color as soon as completed.
Minimum lengths 30-in.
No overages

Box ¼ doz. Evergreen Label
Transfers Evergreen Deluxe with size on toe. Band Evergreen
3-carrier Ringless, 45 gage on welt.
Buyer Saleman

FIG. 3

Dye Lot No. 00188

Style 125 DATE SENT 1/17/36 RET'D 1/20/36 SENT TO WAREROOM 1/21/36 REDYE DYE

Size	8½	9	9½	10	10½	11	Total
Bag No.	A	B	C	D	E	F	
Dozens to Dyer	12	24	36	36	12		120
Classification							
Sorted							

Color (PRINT NAME CLEARLY) SNAPPY PASSED BY
Pairing Instructions Watch lengths — see order sheet

FIG. 4

Date: Jan. 16, 1936

To: Gray Vaults and Dyehouse.
From: Central Planning Office.
Attached are order sheets No. A12598
Put these in dye after Smith Bros. order is dyed.
Figure 85%

Use Styles 125 and 125 A

Special Color Samples
On Snappy, Toasty, Marimba, Burnt-Copper — Use Spring 1936 Standard Color Card
On Burnt Nude, Misty — Use Evergreen special color samples.

Note:- Dye them in the rotation marked on the order. Start with 1, then 2, etc.

FIG. 2

STYLE	COLOR	CALL NO.	TOTAL	DYE LOT	8½	9	9½	10	10½	11
125	Snappy 1		100	188	10	20	30	30	10	
	Toasty 2		100		10	20	30	30	10	
	Marimba 3		100		10	20	30	30	10	
	Burnt Copper 6		100		10	20	30	30	10	
	Burnt Nude 4		100		10	20	30	30	10	
	Misty 5		100		10	20	30	30	10	
			600							

Box ¼ doz. Evergreen
Label
Band Evergreen
Toe Transfer Evergreen De Luxe with size
Sole Transfer
Heel Transfer
Welt Transfer 3-Carrier Ringless, 45 gage

DATE Jan. 15, 1936
CUST. ORDER NO. A 12598
DELIVERY Jan. 25 or sooner
SHIP TO Evergreen Hosiery
1256 Evergreen Boulevard
Chicago, Ill.

DEPT. 42

SPECIAL INSTRUCTIONS
Minimum lengths 30-in.
No overages

SHIPPING INSTRUCTIONS
Acme Fast Freight

Pack in 50-doz. cartons. Ship each color as soon as completed

Forms used in hosiery-finishing order system

ORDERS MARCH

By Milton M. Abrams
Ajax Hosiery Mills

Through the hosiery finishing plant under centralized command

THE customer is interested only in two things: getting what he is paying for and getting it when he wants it. When a hosiery order is started on its way through the various finishing processes, all arrangements should be made at once to insure its being completed correctly and satisfactorily in the shortest possible time. Incomplete instructions and divided responsibility result in delays and incur the displeasure of the customer. Concentration of responsibility and authority, conversely, make for efficiency.

Let us assume that we are about to start a customer's order on its way through an efficiently operated finishing department. A typical order is shown in Fig. 1.

The order is first copied on a regular office form, shown in Fig. 2. This procedure preserves the original order for the files and prevents matters of a confidential nature, such as prices and terms, from being circulated through the mill. When copying the order, we omit all prices and terms of sale. The form shows the consignee's name and address with full shipping instructions and information, colors and quantities ordered by sizes, full finishing and packing instructions, and other essential data. The form is printed and the details are filled in, a hectograph being used for this purpose. This allows us to make as many copies of the order as we desire. The hectograph order blank (hereafter referred to as the original) is the reference form which accompanies the order through the mill finishing department, from the gray storage vaults to the shipping department.

The best procedure is to make as many copies of the order as there are colors. For example, if there are six colors ordered, we make six copies, in addition to the original. We then make out a dye order (Fig. 3) for each color, allowing a percentage of dozens for throw-outs and irregulars as standardized by weekly tally sheets compiled by the inspection division of the finishing department.

There is an instruction sheet for the gray vaults and dyehouse (Fig. 4), giving all necessary instructions as to percentages, styles, what color samples to use, when to put the order in dye, etc. A packing check is taken, and all packings not on hand are immediately ordered.

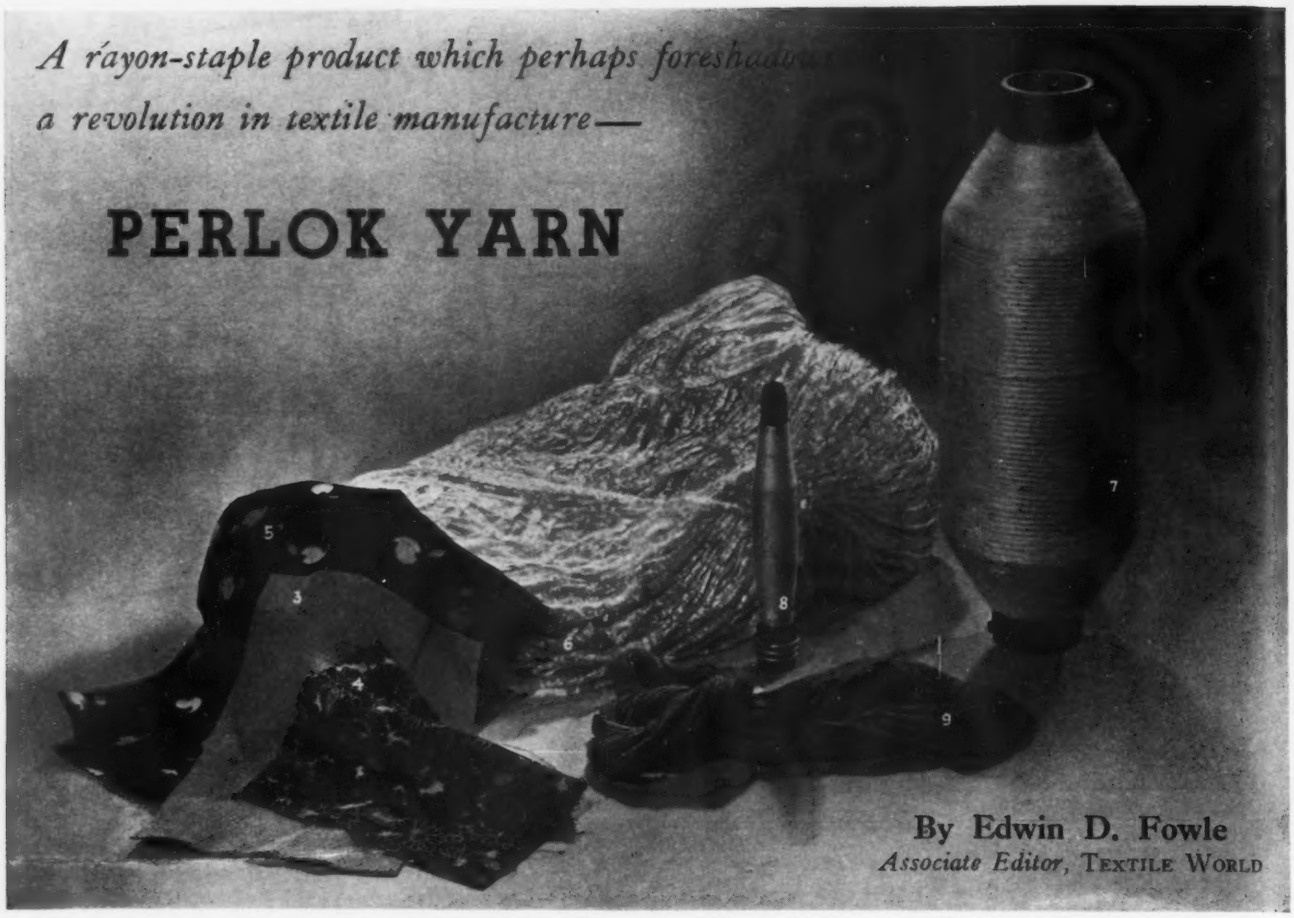
The dye-lot number is entered on the order in the column marked "Dye Lot." This ties in the dye lot with the order.

One of the copies of the order is then attached to the dye order, and together they accompany the dye lot through the finishing department. The original copy is kept in the order-assembly division of the finishing department. The order can then be followed up and checked constantly. With a copy of the complete order following each dye lot, there can be no chance of error in processing and packing the order.

All these records and instruction sheets are made out in one office. All the style-quality percentages, color samples, etc., are filed and stored under one supervision. This centralized control insures competent, efficient, and prompt handling of all orders.

A rayon-staple product which perhaps foreshadows a revolution in textile manufacture—

PERLOK YARN



By Edwin D. Fowle
Associate Editor, TEXTILE WORLD

COTTON grows with its fibers fairly parallel; but before it can be spun, it must be gathered more or less haphazardly and must have the seeds and trash knocked out of it. As a result, the paralleling has to be done all over again in the mill.

Wool grows with its fibers somewhat parallel; but in this case also gathering has to be haphazard, the dirt must be removed and the grease as well, and the matted condition of the fleeces must be corrected. Hence, here again a re-paralleling is necessary.

Rayon also "grows" with its fibers parallel; and in this case there is no gathering to be done, no seed to be knocked out, no dirt and grease to be removed, no matted clots to be broken up. Why, therefore, is it necessary, in producing a short-staple rayon, to chop the filaments, intermingle them haphazardly, and card them back to a parallel arrangement again?

Circumvent Carding and Combing

Some years ago this thought occurred to one J. L. Lohrke, who, with his partner, H. H. Perry, was operating a worsted and rayon top business under the name of Fiber Products Co., at 10 Chestnut St., Philadelphia, Pa. In the case of rayon, the business of these two gentlemen was beginning to encounter difficulties, because the rayon filament was becoming finer and finer and hence more and more difficult to card and comb. Why not, Mr. Lohrke asked, circumvent the processes of carding and combing?

So he and Mr. Perry set about to do that very thing. Their early research showed that the messing up of cut staple is necessary in order that the fibers, when finally paralleled, will be staggered in their longitudinal relation to each other—in other words, in order that in the roving to be spun the end of one fiber will not be adjacent to the end of another fiber, but will be half way along that fiber, or a third of the way along, or quarter way, or somewhere where it will permit the spinning twist to lock one fiber with another to make a continuous and tenacious yarn. The thought occurred to them, as it has to others, that a strand of continuous filaments might be cut diagonally at regular intervals to give a staggered staple which would retain its original parallelism; but the difficulty in blending the staples of adjacent sections so that the diagonal cleft would be properly bridged seemed too difficult to warrant development in that direction.

And so, Messrs. Perry and Lohrke turned to the inherent strength irregularity in rayon (there is the same irregularity in practically anything else, for that matter) to help them. They found that when tensile stress is applied to a band of rayon filaments, all the filaments do not break at the same place but each breaks at the point where its strength happens to be least. As a result, they break almost anywhere, and therefore the end of one broken filament is unlikely to be opposite the end of any other broken filament.

Adopted Roller Drafting

This breaking down, it was found, could be accomplished continuously by the roller-drafting principle discovered by Wyatt some 200 years ago and now as familiar as the alphabet to every textile man. And the pairs of rollers between which and by which the breaking down could be accomplished could be set almost any distance apart to give whatever maximum staple length

might be desired. Also, speeds could be adjusted to give a range of drafts. In this simple way a roving could be produced ready to be spun.

But the control was for maximum length. How about minimum length? And would the irregular staple lengths cause poor spinning? Experience proved that any staple diagram made on the broken-down filament would conform to the law of averages and run the gamut from almost zero to whatever distance apart the rolls might be set. But, strangely enough, the yarn spun from this conglomerate proved remarkably uniform.

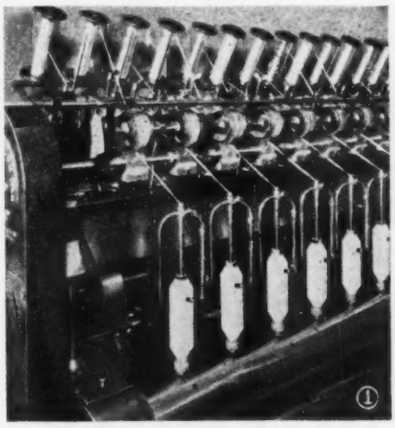
The explanation for this phenomenon, which defies the industry's traditional distrust of irregular staple, was simple enough. Through the operations of carding, drawing, and so on an irregular staple tends to separate and bunch up. In the case of these broken filaments, there is only one opportunity for this separation to take place—in the drafting operation of the spinning frame—and this is not sufficient to allow any harmful separation. Another factor in the yarn evenness is the fact that the roving from which it is spun is evener than a cut-staple roving.

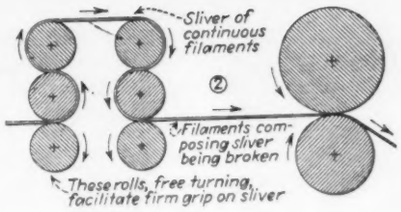
The Yarn Is Stronger

And if evenness, strength also? Yes, strength also—some 20% more on a 30s cotton-count yarn than is obtainable on a 30s cut-staple yarn! This is perhaps the most astonishing, and at the same time most promising, thing about the whole business. The reason for the better strength lies partly in the use of a longer average staple length and partly in a factor which is peculiar to the new process. As every mill-laboratory man knows, when a yarn or fiber is pulled to the breaking point, it is first stretched beyond its elastic limit and permanently elongated. When anything is stretched, a steel bar or a piece of yarn, its diameter is reduced. Thus, when rayon filaments are stretched, they become finer; and it is no secret that the strength of any yarn is somewhat proportional to the fineness of the fibers in it. In fact, fineness of fiber is more important than length of fiber, as wool men have long known and as even cotton men are beginning to admit.

However, in the case of rayon the stretching affords another advantage. It serves to improve the orientation of the micellae, or groups of molecules which make up the fiber. That is to say, it lines up the internal structure of the rayon fiber in a more orderly fashion—more like the manner in which the structure of a cotton fiber, for example, is lined up by nature. Hence a stretched rayon fiber has more strength per unit of cross-sectional area than one which has not been stretched. (See the accompanying table for proof of this.)

Are there any disadvantages in this elongation of the fiber? Unfortunately, there seem to be at present. For one thing, the fiber tends to return to its original length when wet; and this has been reported to cause in certain instances (but not always) a considerable shrinkage in the ultimate fabric. Also, before the yarn is wet, its ability to stretch is limited and hence it cannot give without breaking when excessively strained. However, these difficulties, if they prove serious, may be overcome as the development of the new process proceeds. It would be illogical indeed to expect to find the way entirely clear for so radical a change in textile manufacture. Perhaps both problems can be solved by a wetting-out of the yarn after spinning or by a change in the original character of the rayon. In fact, some progress has already been made in the latter direction. Then again, one of the principal objections to cut-staple yarn is that it stretches too readily and permits garments, for example, to pucker and get baggy. The new yarn will probably never be accused of that.




Sliver of continuous filaments
②
Filaments composing sliver being broken
These rolls, free turning, facilitate firm grip on sliver

EFFECTS OF PERLOK PROCESS ON VISCOSE-TYPE RAYON

All tests were made on individual filaments at Massachusetts Institute of Technology, with exception of orientation test, which was made at University of Illinois.

	Original Filaments	*After Perlok Process*	
Breaking load (50% r.h.) ...	3.1g.	2.5g.	—19.5%
Elongation (50% r.h.)	28.0%	6.0%	—78.6%
Cross-Sectional area (sq. mm.).	.000174	.000089	—48 %
Tensile strength (kg. / sq. mm.) ...	17.8	28.1	+58 %
Orientation (x-ray diagrams)	21%	32.5%	+55 %*

*The University of Illinois estimated that tensile strength might be increased from 1.65 to 2.20 grams per denier.

Becomes the Perlok Process

And so, on Feb. 18, 1930, Messrs. Lohrke and Perry applied for a U.S. patent on "the process of producing yarn from a continuous sliver composed of a multiplicity of substantially continuous fibers grouped in substantial parallelism, reducing the fibers to staple fibers while maintaining their substantial parallelism and the continuity of the sliver." This broad patent, apparently covering all methods which might be devised for producing staple while maintaining the original parallelism of the filaments, was granted on Oct. 18, 1932, under the number 1,883,384. For work on the development of the breaking-down process, the services of Edgar Patchett, formerly of the Industrial Worsted Mills, were enlisted; and later the Whitin Machine Works was called in to develop suitable breaking-down equipment. The machine illustrated by Fig. 1 resulted. It re-

THREE STAGES IN MANUFACTURE of Perlok yarn are shown on opposite page. The large skein (No. 6) contains a 10,725-denier rayon sliver consisting of 1,950 continuous filaments of 5½-denier each. The large tube (No. 7) contains the sliver broken down to a maximum staple length of 7 in. (the breaking rollers having been spaced at a distance or ratch of 7 in.). For worsted this roving would be ready for spinning; but for cotton it requires to be passed through a second breaking-down machine and reduced to a maximum length of say 3 in. The 3-in. length could of course be reached in one breaking-down operation, but it has been proved definitely that the two operations afford a better yarn. The reason may lie in the fact that those relatively long fibers which break at about half their length in the second operation afford two staples of good spinning length, since the second half of such fibers cannot be caught simultaneously by both the back and front rollers and will pass through the machine unmolested. Thus the percentage of long fiber will be somewhat greater than could be obtained by one process employing a short ratch. The cost of conducting the single process is estimated to be 1c. per pound of rayon; and of the double process, 2c.

The filling bobbin (No. 8) contains 80s cotton-count Perlok yarn of 3-in. staple spun on a cotton long-draft frame. Long-draft aprons facilitate the use of such a long staple, although it is asserted that three-roll drafting can be employed if the top middle roll is left unweighted. As in the case of cut staple, a commercial Perlok yarn spun on the cotton system would probably be produced from 1½-denier filament.

sembles a worsted drawing frame at the back and a cotton roving frame at the front. Fig. 2 is a diagram showing the original principle of the breaking-down operation between drafting rollers as applied to this machine. It was E. Kent Swift, president of Whitin, who suggested the name "Perlok" for the new process —a merging of the names Perry and Lohrke.

Perlok machines were early installed in Paul Whitin's Rockdale Mill, at Northbridge, Mass.; and experiments have been conducted there almost continuously. Many experts of one division of the industry or another have witnessed these experiments at various times and have spoken encouragingly concerning the probability of ultimate success of the Perlok principle. One of the first of these was a prominent acetate authority, who was delighted to find that the stretching factor, with the recoverability of the stretch at wetting, permitted the manufacture of a satisfactory spun-acetate crepe yarn; and he has followed the progress of the development closely ever since. A sample of fabric containing Perloked acetate crepe is shown at Fig. 3; and one containing Perloked low-twist acetate, at Fig. 4. It is understood that one of the largest producers of cut staple in this country has also been close to it. Other rayon producers have sent representatives on more than one occasion to Northbridge. A sample containing Perloked viscose-type rayon in the filling is shown at Fig. 5.

Because of the interest shown by the rayon-yarn producers, it seems likely that, once the invention has firmly established its merits, it will be adopted by the producers rather than by the mills and that the finished Perlok roving will be supplied the mills on paper tubes for immediate insertion in the spinning frames. These tubes will be wound directly on the breaking-down machine. Thus, spinning mills can by-pass all processes between the receiving platform and the spinning operation, at an estimated gross saving in operating costs of some 20c. per pound in the case of the worsted system and from 5 to 10c. per pound in the case of the cotton system. There is also a saving in the amount of waste made, since the fewer operations afford fewer opportunities for waste losses. Furthermore, there will be no cluttering up of combing, carding, and other preparatory departments or machines with a lint which is foreign to the material ordinarily processed, and therefore there will be no danger of the rayon fiber getting accidentally mixed with regular stock.

Three stages in the manufacture of Perlok yarn are illustrated by Figs. 6, 7, and 8, as explained at the bottom of the preceding page.

Stock blending is of course not possible if the Perlok system is to be used, but Fig. 9 shows what can be done in the way of a mock twist—that is, a blend obtained by feeding a Perlok roving together with, in this case, a worsted roving into the spinning frame.

Those of us who believe that the textile raw materials of the future will all be man-made fibers and that, as a result, the routine of yarn manufacture will be radically abbreviated, see in the Perlok system the possible beginning of a revolution in textile methods.

SOCIETY CAVORTS IN RAYON

"Midnight"—Lacquered black rayon satin with silver ornaments.

"Crescent Moon"—Rayon transparent velvet with silver ornaments.

"Snow Queen"—Rayon metal fabric with fine pique-like rib.

"Milky Way"—Rayon chiffon skirt with rayon satin bodice.

WITH the cooperation and support of six leading rayon yarn producers, the Beaux Arts Ball, preeminent event on New York's social calendar, was transformed into a "Fete de Rayon" this year, and served to give rayon much added prestige as a fashion fiber. The following firms cooperated: The Viscose Co., the rayon division of E. I. du Pont de Nemours & Co., Tubize Chatillon Corp., North American Rayon Corp., American Enka Corp., and Skenandoa Rayon Corp. The event, which was held Dec. 4 at the Astor Hotel, New York, was attended by 2,000 socially prominent persons, and most of the costumes were of rayon.

BELLE OF KNITTING MILLS

Move of important underwear plant facilitated modernization

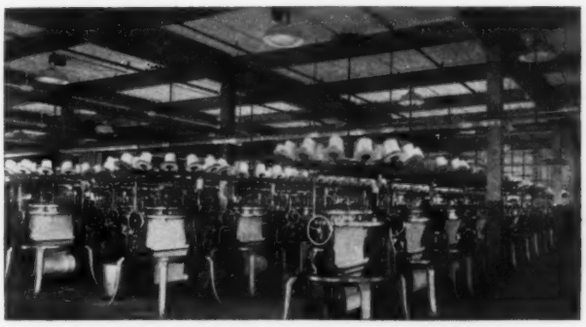


Fig. 1. Wildman knitting department

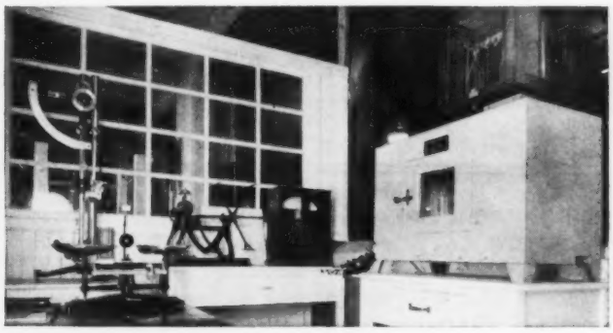


Fig. 2. Testing laboratory

THIS story is a sequel to the one on pages 98 to 100 of the November issue of TEXTILE WORLD, in which S. B. Lincoln, of Lockwood Greene Engineers, described how the Belle Knitting Corp. provided itself with a model dyehouse and boiler plant upon its move from Lebanon, Pa., to Sayre, Pa. What the Belle concern accomplished at the same time in its knitting departments must now be told if an editor's reportorial duties for 1936 are to be satisfactorily discharged.

Belle has close to 400 underwear-type circular knitting machines divided about equally among Wildman, Scott & Williams, and Tompkins makes. Each make is segregated into a department of its own, lodged in an individual room. Of the three rooms, the Wildman is the most interesting from the viewpoint of modernity, because it was built as a brand new addition to the original Foreman & Clark plant, which Belle purchased.

A view of this Wildman room, which has some 3,000 sq.ft. of floor space, is given at Fig. 1. Twelve of the machines are of the new quick-change tuck-pattern type. They are all comfortably spaced for adequate supervision and are operated twelve to a knitter. Oil chutes, designed by the mill, have been placed under the cylinder gears to carry leaking oil clear of the machines and onto the floor. Incidentally, ingeniously convenient cabinets, shelves, and bins have been provided throughout the mill to render unnecessary the placing of any yarns, fabrics, parts, etc., on the floor. Lastex, for example, is fed to the machines from cans, into which it is neatly piled by a home-made device developed by the superintendent. At the bottom of the Wildman machines special home-made guards keep the fabric clear of oily gears. One of the Wildman machines is a 24-feed.

The General Electric lighting shown in Fig. 1 is typical of that throughout the mill. The lamps are mostly 450 watt (with a few 750-watt) in the latest combination of mercury vapor and incandescence; and they are spaced about 12 ft. apart in staggered lines.

Both the Wildman and Scott & Williams rooms are equipped with American Moistening automatically controlled humidification. Keystone Engineering airplane-type fans make possible a complete change of air every 3 min. in these two rooms. Ingersoll-Rand air compressors operate the humidity system and provide compressed air for cleaning throughout the mill.

The mill contains 30 new General Electric motors. There are 12 Wildman machines to a motor, 32 Scott & Williams, and three Tompkins tables of two units each. In the latter case the motor is located under one of the tables to reduce floor space. Square-D push-button controls are installed in convenient locations.

In the Scott & Williams room are twenty of the new automatic double-butt tuck machines. Swiss rib is knitted in this department.

A new testing laboratory, Fig. 2, contains an Emerson conditioning oven, a Suter single-strand tensile-strength tester, and the accompanying reels, balances, etc. The laboratory is located in the Wildman room and is open to the controlled atmosphere of that room. The strength, count, moisture content, and oil content of yarns received are tested constantly. Tests are also conducted regularly on fabric. Just outside the laboratory is located an ingenious inspecting machine devised by the superintendent, for inspection of goods before and after dyeing.

Efficiently designed stock rooms for yarns, goods, and machine parts have been constructed. The one for the latter, Fig. 3, is a model of neatness and convenience. Each of the three knitting departments has its own machine shop for light work, and there is a large central shop for heavy work. The inventory control for machine parts is as complete as in an automobile shop. For each department a chart shows the size, gage, and general set-up of every machine.

Much of the credit for the efficient manner in which Belle's new knitting departments have been planned and installed belongs to Jack Turner, who was superintendent at the time the move was made. Mr. Turner, as noted in last month's TEXTILE WORLD, has resigned to become president of the new Apex Knitted Fabrics, Inc., New York.

Fig. 3. Storeroom for machine parts

SHALL TWIST BE BALANCED?

Mills should conduct more research to establish single and ply relationships that suit conditions

By A. K. Landau
Saco-Lowell Shops

MR. LANDAU doesn't pretend to know the universal answer (if there is one) to the problem of securing the correct relationship between single and ply twists for all purposes, but he is familiar with the unscientific manner by which this relationship is established in most mills. In this article he sheds some light on the factors which influence the problem and urges that cotton mills engage in more research on the subject.

THE amount of twist inserted has a very important effect on the appearance, as well as on the strength, of both single and ply yarns. For example, when the ply twist is in the opposite direction to the single, some part of the original twist is removed from the single; and when the yarns are twisted in the same direction as the single, twist is added. When a definite result is desired in the final yarn, this matter is an important consideration in the manufacture of the singles. For purposes of distinction in this discussion, the terms "positive" and "negative" will be used to designate respectively the direction of the twist in the single and the direction opposite to it.

General Effects

It is well known that, when twist is low, the natural luster of the cotton fiber shows off to good advantage in the yarn. Also, the yarn is soft and yielding to the feel, and "full," with loftiness and enhanced covering power in the woven or knitted fabric. Increased twist reduces the luster or bloom of the yarn, renders it hard and wiry to the feel, reduces the covering power, and gives an appearance of tightness or closeness. Furthermore, the highly twisted yarn is relatively free from protruding fiber.

The amount of twist also has a fundamental effect on the strength and elasticity of the yarn, and to a very great and definite extent fixes the character of the yarn with regard to these important properties. Experiment and practice have demonstrated that, up to a certain degree, an increase in the number of turns of twist will add strength to the yarn, since the fibers will be more closely bound together, and will add to the elasticity because of the effect on the spirality of the individual fibers.

It is therefore clear that when a number of single yarns are twisted together, any variation or modification of the twist will affect the strength, luster, and appearance of the plied yarn. Therefore, in the manufacture of ply yarns, whether for knitting, weaving, or mercerizing and thread manufacture, the establishment of the proper twist relation between single and ply is of extreme importance. In general, the best results are attained when the twist is "balanced" or as near this condition as other practical considerations may permit.

Balanced Twist

The number of turns per inch of twist to be inserted in a single yarn intended for ply twisting is decided by many considerations. The general formula is

$$T \text{ varies as } \sqrt{\text{Number}}$$

This formula presupposes that the singles are all prepared from the same cotton and by the same spinning process. It has been found that proper twist is inversely proportional to the fiber length. We can therefore indicate this relation by introducing into the basic formula a twist coefficient E which varies with the length and also a coefficient F which will vary with the fineness and character of the cotton. The formula will then read:

$$T \text{ varies as } (E \pm F) \times \sqrt{\text{Number}}$$

The only factor in this formula which has any regularity is the square root of the count. The factors E and F will not affect the plied yarn, as long as T is held to a predetermined standard in the single.

The maintenance of this standard is again subject to a certain amount of judgment on the part of the manufacturer of the single yarn; but when a standard has once been accepted for appearance and strength, it should be rigidly maintained, so as to assure satisfactory deliveries from the twister. Sometimes the appearance and strength of the yarn are more important to the satisfactory fulfilling of a contract than is a definite number of turns per inch, so that here the judgment of the twister-room overseer must be relied upon to produce a yarn that will meet the requirements.

Two Critical Points

The effect of ply twist is, as has already been stated, to reduce the initial twist in the single if the direction of the ply twist is opposite to that of the single, or to increase it if the twist is in the same direction. In other words, if the twist is S in both operations, the single twist will be increased; and if it is Z in the single and S in the ply, the single twist will be reduced.

The amount of this variation is affected by the resistance of the fibers, but in general one turn in the ply reacts on one turn in the single. Thus we can reason that there are two critical points in the twisting operation—one, when the negative plying twist equals one-half the original positive twist, plus a few turns to overcome resistance; the other, when the negative plying twist equals the positive twist.

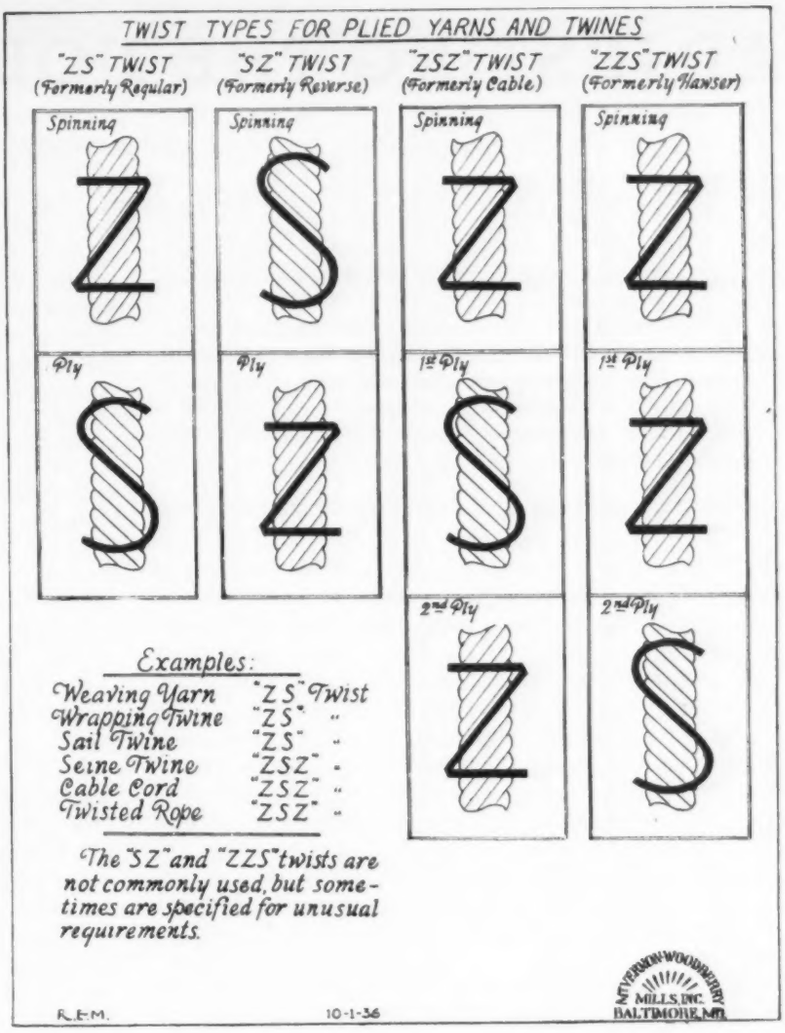
In the first case, assume that the single component yarns have 30 turns per inch and that the ply twist is 15. The single yarn will then contain 30 —15, or 15 turns, in which case the twist is said to be balanced. In the second instance, the ply yarn, with 30 turns, will have all the twist removed from the single; and to continue the twisting will add negative twist to the ply yarn in an amount in excess of the positive twist. During this

operation the fibers in the component yarns will have become more or less merged with each other; and varying effects will result, depending on the behavior of these components under different conditions, as in the case of cabling or in the making of multi-ply yarns.

It is sometimes stated by textile engineers that the twist required in a ply yarn is the same as that required in a single yarn equivalent to the count of the combined yarns. According to this rule, a yarn counting 40/2 twisted positively in the single and negative in the ply would have the same twist as a single 20s. Assume the 40s to be made with a constant of 3.5. The single twist will then be $3.5 \times \sqrt{40}$, or 22 t.p.i., and the ply will contain

$$3.5 \times \sqrt{\frac{40}{2}} = 15.65 \text{ t.p.i.}$$

This would have passed the balanced condition, and only 22 — 15.65, or 6.35, of the original twist in the single would be left. This would form a very soft thread, low in tensile strength, but very lustrous. Its weakness would make it very unsatisfactory for most of the common manufacturing purposes. If the yarn in question contained about 26 to 28 turns, it would be within the maximum strength, but harsh to the feel, lacking bloom and coverage. This rule is definitely unsuited for application where strength is a major consideration.



Directions of Twist—Officials of the Mt. Vernon-Woodberry Mills, Baltimore, Md., are circulating the above chart among their employees to educate them on the new designations for direction of twist, B. L. Whittier announced at the recent meeting of Committee D-13.

Perfect Balance Difficult

As a matter of fact, a yarn made in two-ply, with a perfect balance in twist, is difficult to attain, since the very high twist needed in the single makes the cost of manufacture unreasonably high. The other extreme is a single so soft that the work in the spinning and winding would run badly because of low strength, although it might result in a very lofty and lustrous yarn.

As an example, assume that we are making a 60/2 spun from American Delta long-staple hard cotton, with a staple length of $1\frac{3}{8}$ in. combed. This yarn will be spun with a constant of 3.50.

$$3.50 \times \sqrt{60} = 25.17 \text{ t.p.i.}$$

We shall assume that this ply yarn will be made in three qualities: soft, with a twist constant of 2.37; medium, with a constant of 3.54; and hard, with a constant of 5.47.

We shall then have twist in the final two-ply as follows:

Single, positive twist	25.17	25.17	25.17
Ply, negative twist	13.00	19.00	30.00
Twist remaining in single	+12.17	+6.16	—4.83

In the first case balanced twist is attained. The yarn will be soft and loosely spun, with good coverage, but weak. The characteristics of the single yarn will be retained with but little increase in the ultimate tensile strength. The two strands will be distinct, with but little intermingling of the component fibers.

In the second case there will be a definite loss of luster and coverage, the mingling of the fibers of the two strands will have taken place to a certain extent, and the addition of 6 turns in the ply will have added to the strength. While the yarn will not be so soft as that in the first example, it will not be excessively harsh to the hand.

In the third case, the ply yarn will be hard and wiry, with a dull appearance, lacking in bloom and coverage, but with added strength resulting from the twist in the ply operation. The negative twist in the single is without definite effect on the strength of the ply yarn.

These are the main effects to be anticipated when twisting yarn, and our short treatment of this complex subject is but a skimming of the surface of a field which can be explored by every mill running twisters. The rules or empirical formula so commonly used could in most instances be profitably modified by the application of pertinent findings accruing from a study of the actual operations of the twister room and the demands to be met by the yarn in any particular case. A reduction in the turns per inch, through a revision of the twist constant, will increase the production of the twister many hundreds of pounds in the course of a year's operation, and without the expenditure of additional funds for any purpose. It is a fruitful field for research for any mill making two- or multi-ply yarns.

ADJUSTING THE NOBLE COMB

Practical suggestions for setting dabbing brushes, drawing-off rolls, star wheels, ploughs, circles, etc.

By John C. Lowe

PROFESSOR LOWE is a member of the instructing staff of the Wool Department of Lowell Textile Institute, Lowell Mass.—a department which has lately proved that it is possible to clean wool by refrigeration and also that worsted mills can profitably reduce the number of their drawing operations.

THE Noble comb affords the simplest method of combing. Because the operation is continuous and circular in action, rather than intermittent and rectilinear, it is possible to obtain a high production. This method of combing, however, has it limitations. It cannot do a perfect combing in one process, because it cannot comb all the length of each fiber which passes into the top. It cannot remove all fibers below a certain length, because it cannot select noil. The percentage of noil is relatively high, due to the width of set-over of the small circle and the necessary settings of the feed and the inside drawing-off rolls. Its action is very severe, especially during the first part of the combing which immediately follows the dabbing of the stock into the pins.

If it is impossible to do a perfect combing job, the question arises as to how near perfection the Noble comb can come in a single combing. A Bradford authority states that "the best Noble comb sliver had six to eight neps per yard in the finished top, or 240 to 320 neps per pound." Of course this was a fine wool, as the finished top is evidently 2 oz. per 5 yd. In the United States, a 64s-quality top has been considered satisfactory when 5 yd. of 3-oz. top has contained 600 neps.

To Minimize Neps

To reduce neps to a minimum in the finished top requires the following conditions: good carding, efficient gilling, proper amount of moisture in the stock, correct temperature of the comb, sufficient relative humidity, circles suitable for the wool being combed, and proper adjustments of the circles, dabbing motion, and other mechanism.

The circles should be as true as is possible, so that the space between the combing rows of pins at the tangent point will not vary, nor the distance or setting of the drawing-off rolls change as the circles rotate. When this fault occurs, defective combing results, more neps and vegetable matter are carried into the top, the noil strip from the small circle is not even, and noil is increased. Damaged pins, pins missing (single or in gaps), incorrect dabbing (dabbing behind or in front of the tangent), excess oil in the stock, excess moisture, excess draft, circles fouled either with grease or fiber (especially the small circle), improper action of the noil brush and noil ploughs (which causes noil to pass the ploughs) —all these faults add their quota to produce a poorly combed sliver. When the ploughs of the small circle are fouled with grease, the noil will pile up on them and will not readily fall into the noil bin. See that the circles are kept clean, and so avoid trouble with the ploughs. Never overload a comb.

Dabbing-Brush Setting

The action and setting of the dabbing motion and dabbing brush are very important, and a few practical hints that may be of assistance are listed below:

1. Set brush to dab the stock in the pins right at the tangent.
2. Set it so that, for depth, the stock will be down far enough to leave half of the pin clear. In the mill this is termed "half-way down."
3. See that a good heel is kept on the brush. When the heel is worn, packing may be inserted to lengthen the life of the brush.
4. Do not dab the stock too deep. It will cut the stock and increase the noil. In addition, the brushes will soon wear out, the life of the aprons will be reduced, and there will be more strain on the pins.
5. Setting the brush so that it dabs in front of the tangent will result in neppy slivers.
6. Dabbing behind the tangent will produce a similar result, and this will also be hard on the inside rows of pins. It will also put the stock in the pins in lumps and thus leave gaps of empty pins.
7. When a brush picks up too much, take it off.
8. Set the brush to dab across the entire set-over of the circles, especially the set-over of the small circles.
9. If possible, inspect the dabbing brushes every hour.
10. Brushes will last longer if atmospheric conditions are correct and there is a proper amount of moisture in the stock. The correct conditions are represented by 80° F., 75% relative humidity, and from 18 to 22% moisture in the stock, combined with the correct temperature of the comb.
11. Efficient running of the dabbing motion will prolong the life of the brush and produce better combing. Thorough lubrication and avoidance of slip are as important as proper setting.
12. When stock is very dry and much water is used, the brushes will wear out quickly.
13. The life of a dabbing brush is prolonged when the gilling before the comb is efficient. Three gillings with intersecting gill boxes are not an excessive number of operations before the Noble comb. All parts of the comb benefit—aprons, pins, and brushes; better combing results; and the noil is reduced to a minimum.

In addition to clear combing—freedom from impurities—an even end from the comb is very desirable.

The first essential to obtain evenness is even tension on all ends. This is difficult to obtain, but best results are secured when there is enough tension to prevent slack ends. (The importance of proper tensions at the punch or baller is apparent). Some men have the ratchets move one tooth, thus giving minimum let-off to the comb balls for each feeding action. Excessive

speed of the drawing-off rolls will cause uneven sliver. This is also true of the coiler. Never draw the ends tight, especially for fine wools; leave just a nice sag in the end.

In addition, while reference is being made to the coiler, for fine wools never thread the end through the eye of the coiler trumpet. It will condense the end too much; and when an uneven place comes along, it will pull a little as it passes through. Threading as advised produces a much better-looking end and one which will run better at the first finisher gill box.

Circles out of alignment—that is, eccentric—not only affect noilage and good combing but also make it impossible to produce an even end. Careless setting of the lap preventer is many times a cause of uneven sliver. A poor, rough, and uneven end may be caused by improper setting of the star wheel. Adjust the star wheel for position, and regulate the blades of the star wheel so that the fringe of the small circle is not only correctly turned to meet the inside apron but also allows the tips of the fibers to meet the center of the sliver from the large circle. If not set properly, the fringe will project either over the top edge or the bottom edge of the sliver. This may cause laps on the safety roll. The star wheel should not rotate too quickly, as this causes breakage of fiber and sends fly on the comb.

Plough Bottom Must Be Level

Ploughs should be kept clean and smooth, and the bottom edge should run level on the brass of the circle. If set so that only the point of the toe touches, this point soon wears; and many times, on the small circle, the noil passes under the plough and the pins are soon choked with noil.

The aprons and the drawing-off rolls—including the tension rolls, safety rolls, and traverse motion—also require careful setting and adjustment.

The aprons must run true. Avoid excessive pressure and tension and so avoid cutting the stock and damaging the aprons. Apply pressure evenly on both ends of the roll, if comb is not equipped with evening devices. A groove in an apron reveals excess pressure and its location. Hard drawing-off reduces the life of the apron. Set the traverse motion with as long a traverse as is possible and adjust for minimum dwell. The function of the traverse motion is to prevent grooving and preserve the life of the apron. A grooved or badly worn apron or a rough apron should be removed, because such conditions prevent good drawing-off.

Pinning of Circle

Reference has been made to the pinning of the circles, it having been stated that the pinning should be suitable for the wool being combed. Good combing depends upon two good points in pin setting:

1. The finer the wool, the less must be the wool space between contiguous pins. This is important only on the three or four finest rows of pins in the large circle, but it applies to all the rows of pins in the small circle.

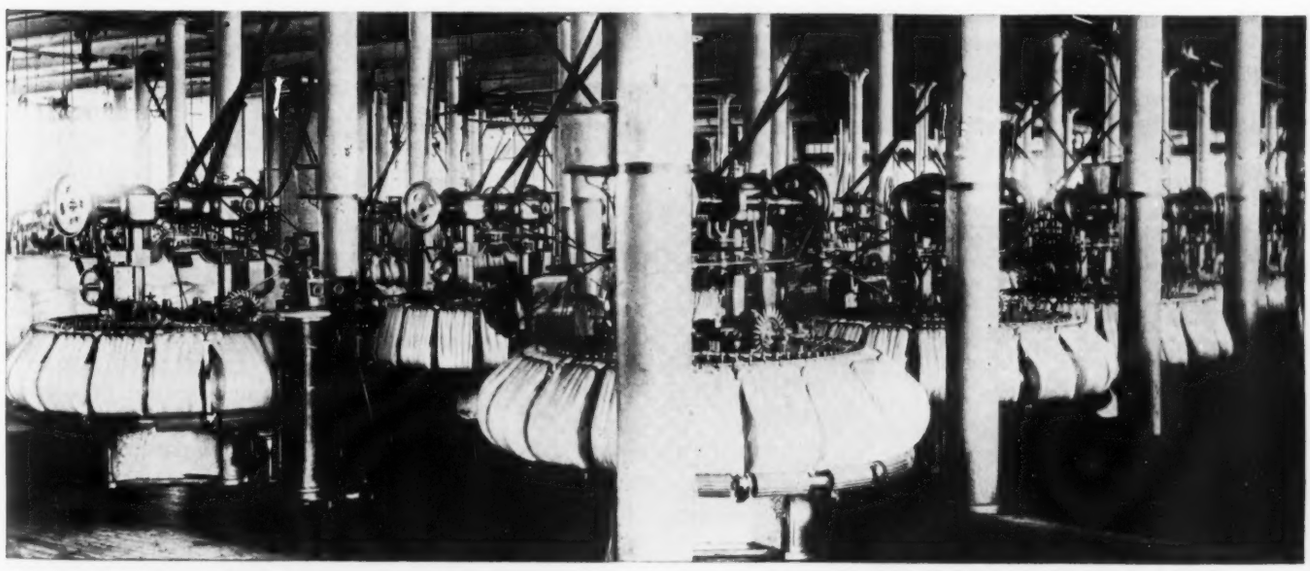
2. The pins must not be so fine that the groups of fibers will be strong enough, when dabbed into the pins, to spread the pins and allow the neps to pass through.

We hold the opinion that a finer circle can be used for solvent-scoured wool or wool treated by the Frosted Wool Process, because such wools contain fewer neps, less vegetable matter, and respond to the drawing action more easily. Sometimes a better combing can be obtained by using a slightly coarser pin setting. The foregoing remarks suggest thorough scouring, avoidance of excess oil in carding—even carding without oiling—adequate moisture in the stock during carding, and thorough gilling of the wool previous to combing if a minimum number of neps and pieces of vegetable matter are required in the finished top.

Instead of setting the small circle a shade higher than the large circle, we offer a suggestion that it would prove as effective, and would ease up a little on the drawing-off from the small circle, if the three inside rows of pins in the small circle were made from $\frac{1}{8}$ to $\frac{3}{16}$ in. longer. The brush would then dab the end of the sliver into the pins first.

Never allow a small circle to run after it is discovered that the pins are badly worn in the central portion of their free length.

See to it that the circle pinions are always doing their work of driving the circles. They must be set deeply enough in mesh to prevent backlash. Excess backlash here results in soon spoiling the set of the circles, especially the small one, and a poor set of the circles will soon wear out dabbing brushes, in addition to giving poor combing.



View in combing department of Pacific Mills, Lawrence, Mass.

MATELASSÉ VARIATIONS

Four types of weave, and practical suggestions for slashing and entering the rayon warps

MATELASSÉS range from the plain two-beam one-shuttle construction to the more complicated pick-and-pick layout, the former being manufactured on automatic looms on a volume basis and the latter calling for 4x4 box looms to permit the necessary flexibility.

Four Types of Weave

We can distinguish four types of matelassé weave:

First, the plain-loom cloth calling for two beams—one of crepe and one of no twist—and shot with one shuttle of no-twist filling. (See Fig. 1.)

Second, the box-loom cloth, using one beam of no-twist yarn and shot with two picks crepe and two picks no twist, alternatingly. Sometimes the filling order calls for two picks of crepe and four picks of no-twist. Naturally ths disitribution produces a better hand, since two-thirds of the filling is used for the face and only one-third for back floats. However, care must be taken that a crepe of sufficient contracting power is employed, as there are only one-half the crepe floats relied upon to form the figure when comparing this with the two crepe and two no-twist distribution mentioned previously. (See Fig. 2.)

Third, the box-loom cloth calling for two beams and two shuttles and therefore forming a regular georgette weave on the back of each blister. (See Fig. 3.)

Fourth, the pick-and-pick cloth, using an even number of picks for no-twist yarn and odd picks of crepe. This category as a rule calls for two beams. The filling layout may include S and Z twist of crepe or may have tinsels, nubs, and other yarn. It is evident that such constructions call for three or more shuttles. (See Fig. 4.)

In the plain-loom matelassé some very effective patterns can be produced. The trick naturally is in the entering draft of the harness. It is advisable not to produce too large a figure, in order that the crepe floats may be kept down to the minimum. Floats that are too long are objectionable, as they form loops during the boil-off. The same ruling applies to the one-beam two-shuttle construction where the crepe floats are formed by the filling. In the latter great care must be taken that the shuttles always work in the same order. Misplacing one for the other naturally ruins the goods.

As mentioned before, the use of crepe both in warp and filling permits the weaving of a georgette back and therefore greatly enlarges the field of designs employable.

When Tinsel Is Used

The same applies to the pick-and-pick cloth. This weaving principle is mostly applied when it is necessary to use an expensive yarn—for instance, a metal or "lamé." This yarn is largely imported from abroad. The sizes mostly in demand are 40/45, 30/32, and 17/18. These numbers represent the approximate thousand of meters per kilogram. As a rule, one end or pick of such tinsel yarn is sufficient to produce the desired result, but of course one pick requires a pick-and-pick loom. Such constructions use three shuttles as follows: one shuttle, no-twist; one shuttle, crepe; and one shuttle, tinsel. Sometimes both twists of crepe are needed, in which case another shuttle will have to be added.

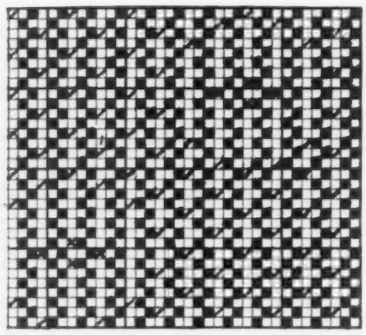
Of course, the patterns are all controlled by the harness entry of the crepe or no-twist yarn on various shafts. In other words, when the figure is to be formed by the no-twist yarn, the crepe can be controlled by two harnesses. The no-twist therefore is entered in a straight, point, or group entry, as the case may demand. If the crepe weaves the figure, naturally this principle is reversed. It is always advisable to reserve two shafts for edges, since they have to be worked sometimes in a special way to assure proper binding off of the filling. However, this is not always possible, since some patterns require every available jack for the weave.

Again, it may be necessary to protect the edges from tearing by the use of a heavy catch cord. This is particularly the case in metal weaving, and in such instances the use of an extra jack is advisable.

When satin-face matelassés are demanded, the figures are formed by the crepe. The no-twist beam is entered on the front shafts (nearest reed); and as mostly a five-bind satin is desired, the first five harnesses are reserved for this beam. Such constructions usually employ a finer-denier yarn, due to the greater number of ends per inch. As this may cause some trouble with crowded drop wires, one should carefully plan the number of banks wanted before proceeding with this operation.

When laying out the pattern chain for such a satin matelassé, it is necessary for the figure repeat, which is controlled by the crepe shafts, to be a multiple of five. Five represents the repeat of a five-leaf satin. Where the looms do not have a

Fig. 2 (at right). One beam. Two picks no-twist, two picks crepe. Pattern repeat, 40 picks; box repeat, 4 picks.



/=Crepe ends X=Binders to reduce floats
Fig.1

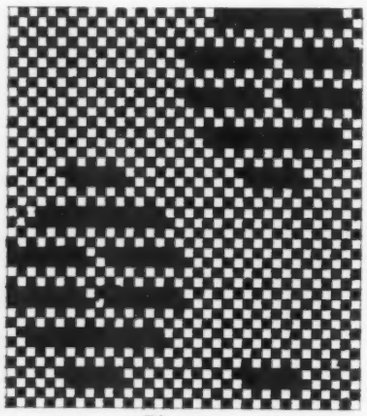


Fig.2

Fig. 1 (at left). Two beams, one shuttle.

By S. C. Veney

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The author analyses various practical combinations of crepe and no-twist yarn

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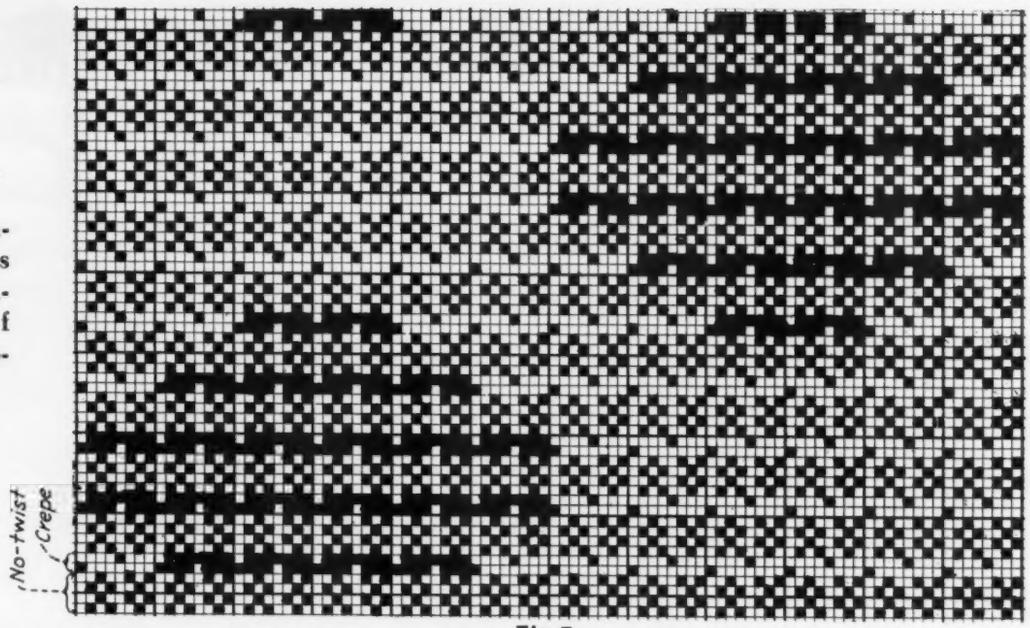


Fig.3

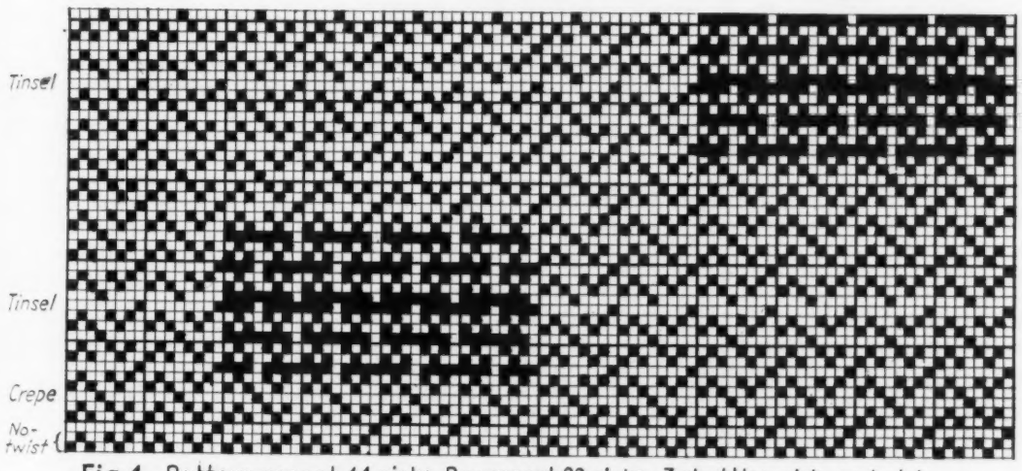


Fig.4 Pattern repeat 44 picks. Box repeat 22 picks. 3 shuttles pick-and-pick

Fig. 3 (above). Pattern repeat, 60 picks; box repeat, six or twelve picks. Two beams and two or three shuttles, depending on twist.

Fig. 4 (at left). Pattern repeat, 44 picks; box repeat, 22 picks. Three shuttles pick-and-pick.

separate box attachment, but have their boxes controlled from the same chain as the pattern, the chain has to be extended until a number of bars are found into which the box repeat, ground repeat, and crepe repeat can all be divided. This refers to a twenty-jack ordinary two-by-one box loom, in which only nineteen harnesses can be used for the weave, while the twentieth jack runs the boxes.

Selecting the Entry

When selecting an entry for matelassés it is well to proceed with much care. It is sometimes advisable to add more shafts. The particular pattern in question may not need them; but additional shafts will permit dozens of new effects to be produced on the same entry and therefore will make possible rapid changes. Experience has proved repeatedly that this system helps to keep up production and keep down costs by saving the entering of a new warp.

Crepe warps are mostly warped with two ends S twist and two ends Z twist. Again, they can be made with all one-way twist, using the opposite crepe for filling. Where large figures are produced, these two systems will show practically no difference, while in the one-shuttle construction one twist in the warp will naturally create a rough ground. Sometimes this is desired.

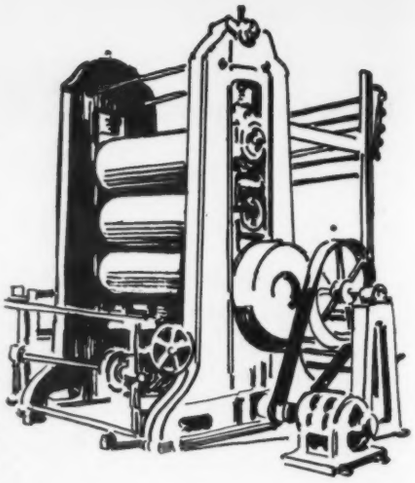
The slashing should be governed mainly by the pick-age. While the plain matelassés will possibly be given around 48 picks per inch, depending largely upon the size of yarns used, the pick-and-pick cloth may call for around 80 picks. A satin naturally will be still higher, so that the concentration of slashing liquor must be adjusted accordingly. The beams must be lined up carefully, for, if the crepe binds and chafes against the no-twist yarn, particularly acetate, there will be trouble.

One should also be very careful to watch for the difference in take-up between the various warps in multiple-beam constructions. The crepe warp should not be any longer than the length of the no-twist warp before slashing. Where acetate warps are used and a slashing gain of 2 to 3% is attained, the crepe warp at times can be made up to 30 yd. shorter; while no-twist viscose warps with a stretch of 6% or more quite naturally call for a proportionately longer crepe warp to equalize the take-up or lengths better. However, it is impossible to establish a fixed rule, since the differences in patterns with their respective variations of interlacings, as well as the systems used in mills, control this to a great extent. For example, one will find that a no-twist warp made on the cone creel will act differently from one warped from bobbins. The best guide is the running out of the first warp, after which one can figure a pretty close average so that future warps will be kept from varying more than 3 yd. *(To be continued)*

CIRÉ FINISH

On acetates requires accurate control of calender temperature and pressure

By Philip Le Brun



FOR fall and winter fabrics, the ciré finish is becoming increasingly important. A properly finished ciré fabric should be soft and supple and should have a subdued luster, with a chamois-skin appearance and hand. The cloth should also have a uniform texture, in which it is practically impossible to distinguish the weave on the face. The ciré or leatherette finish which is popular today on broad goods differs entirely from the original ciré finish on ribbons, and is best obtained on a satin fabric constructed of all-acetate yarns or on one having an acetate face and a rayon or real-silk back. It is difficult, if not impossible, to produce a satisfactory ciré finish on all-rayon fabrics. All-silk fabrics can be given another type of ciré finish; but the method employed is different from that followed in the case of the acetate constructions.

The preliminary processing during the boil-off and dyeing operations of acetate fabrics which are to be ciré finished is, with one notable exception, exactly the same as for cloth which is to be given the ordinary, soft, mellow finish. That is, it is customary in most plants to leave definite amounts of oil or some other softening material in the cloth after dyeing. This is intended to provide a soft handle in the finished cloth and obviate the passing of fabric through an oil or softening solution on a quetsch during the subsequent finishing process. For ciré finishes on acetate fabrics, it is essential that all oils and other fatty substances be rinsed out of the goods before drying. In the same way, all soap remaining from the acetate dye liquor must also be rinsed out before the cloth is dried.

It is a well known fact that under sufficient heat and pressure cellulose acetate fibers will fuse or melt together. Production of ciré finishes is based on this principle.

Friction Calender Used

In practice, ciré or leatherette finishes are obtained by passing the dried and framed goods through a hot friction calender. The degree of heat (steam pressure in the heated roll) and the hydraulic pressure needed are best learned by experience with each specific fabric. About two to five runs through the calender are usually necessary to obtain the desired result. Just enough tension should be used on the batch roll to prevent the cloth from traveling around with the calender rolls.

It is possible to fuse the acetate sufficiently in one slow run. However, this is a dangerous procedure, since, with the extreme heat necessary, it is likely that the fabric will stick to the calender or will even pull apart while it is in the weakened plastic state. Experience has shown that best results are obtained by giving the goods several runs. In this way, the face of the cloth is fused more and more during each successive run through the machine, until finally a uniformly fused surface is obtained.

Since many acetate dyes are oil soluble, presence of oils in the cloth may cause a color mark-off on the hot calender rolls. This will result eventually in blotchy goods. Strong traces of soap will act in the same way, and, in addition, may leave an objectionable odor in the finished goods. It is important to note that the dyes used for coloring this type of fabric must be fast to heat. That is, dyes must not be employed which show a permanent or radical change on hot ironing or which tend to sublime.

After friction calendering, ciré fabrics are usually given several runs through a button breaker in order to make them more supple and to cause them to drape better. On rare occasions, the goods are run through a spray sizing machine using a 2% solution of sulphonated olive oil. However, this is seldom needed, because sufficient softness is generally obtained by the calendering alone.

In addition to the all-over ciré finish, it is possible also to produce patterns, by using an embossing machine, rather than a friction calender. Here, control of temperature and pressure is vitally important, since the effect is obtained by one run through the machine at a very slow speed. According to the particular embossing roller employed, various designs can be obtained in the form of a permanent depressed pattern having an entirely different luster from the rest of the fabric. The embossed ciré finish shows up particularly well on acetate taffetas.

An all-rayon fabric will not fuse in the same manner as an acetate fabric, and, therefore, does not respond properly to the friction-calender treatment. Such cloths are sometimes sprayed with a cellulose solution and are subsequently Palmered and calendered. The final result is bulkier and not as pleasing as that obtained with acetate satins, and cannot be considered a true ciré finish.

Ciré on Silk

Heavy silk satins are given a ciré finish in an entirely different manner. The cloth is first heavily sized with a tragacanth-gelatin solution containing a small amount of sulphonated olive oil. The size mixture is prepared by mixing 2 gal. of a 6% tragacanth solution, 2 qt. of an 8% gelatin solution and 1 pint of sulphonated olive oil with sufficient water to make a 10-gal. batch of size. The fabric is run directly from a two-roll mangle into a tenter-Palmer unit, where it is stretched to width and dried. A final hot calendering on a friction calender and button breaking complete the process.

Silk satins can be finished in this way so as to almost duplicate the finish of an acetate cloth. While the result is not a true ciré finish, the fine glazed surface and very fine denier of yarn used in this type of cloth combine to present an appearance much like that of a ciré-finished acetate. However, the silk material almost invariably is heavier than the synthetic fabric.

COTTON TWILLS

By John Hoye

THIS treatise on the constructions, finishes, and uses of STAPLE COTTON FABRICS began in the January issue. The present instalment continues the discussion of twills.

Four-Harness Even-Sided Twill

Four-harness (or four-leaf) even-sided twills are 2/2 twills (two up, two down) and are also known as *reversible* or *serge twills.* They have an even or balanced twill effect on both sides of the cloth—on one side a warp or left-hand twill, and on the other a filling or right-hand twill. They are usually finished, or put up when finished, with the filling twill as the face side.

These twills are made with carded single yarns, with ply warp and single filling, with all ply yarns, and sometimes with soft-spun filling yarns. The ply-yarn cloths give the best "serge" effects and the soft filling yarns give a good nap or "flannel" effect. Ply-yarn serges imitate the worsted serges.

Finishes used: Flannel (napped one or both sides), mercerized, starched (serge) finish. Usually bleached. Dyed and printed (sometimes register-printed to imitate woven stripes). Often preshrunk.

Uses in finished state: Suitings, skirts, dresses, shirts, slacks, caps, linings.

Widths: 30 to 39″

Constructions: 48x48 to 62x58.

Yarns: 14s to 22s.

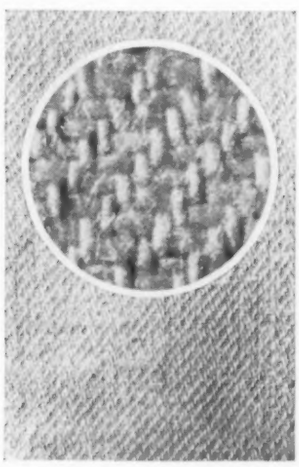
Examples of 4-leaf even-sided twills:

32″ 48x34 3.45
33″ 48x48 3.00

30″ 48x48 4.50
31″ 50x46 3.37
39″ 60x52 2.05
32″ 62x58 2.50 2-ply warp and filling
36″ 54x52 3.66
43″ 48x43 1.25

The following three twills have more of a filling-twill effect than a warp-twill effect because of high pick:

39″ 76x88 2.55 yd.
58″ 68x80 2.00 yd.
58″ 68x80 1.74 yd.



J. W. Valentine

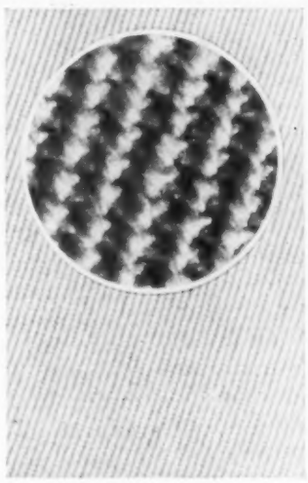
4-Leaf Serge 39″, 60x52, 2.05 yd.

Steep Twills

Gabardine and *tricotine* are steep twills. Such twills usually have an angle of about 67½°, which is obtained by moving each of the successive interlacings up two at a time. After the first warp end interlaces with the first pick, the second end interlaces with the third pick, the third end with the fifth pick, etc., thus producing a steep twill effect.

Gabardine

Gabardines are very pronounced warp-face twills. They have a steeper diagonal than any of the other standard twills, with an angle of 67½°. They are made with eleven, thirteen, or fifteen harnesses, depending upon the length of the float. In



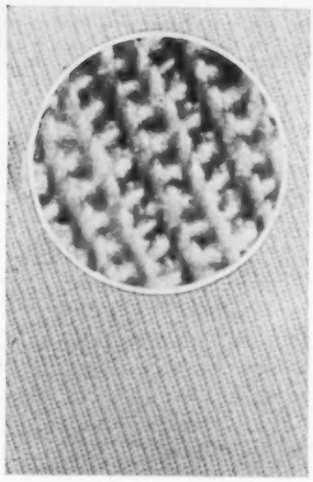
Combed Gabardine 40″, 112 x 76, 1.70 yd. Ply Warp (Right Twill)

making eleven-harness gabardine, each warp end is woven so that it floats over five picks, under one pick, over one pick, under two picks, over one pick, and under one pick to each repeat of the weave. Thirteen or fifteen harnesses are used when a longer float is required, the warp threads floating over seven or nine filling threads.

Gabardines are made with carded or combed yarns, either all single yarns, or ply warp and single filling yarns. In single-yarn cloths, the twill is upward to the left. In ply-warp cloths, where reverse twist is used in the ply yarn, the twill is to the right. The twill is the most pronounced when ply yarn is used. Sometimes in single-warp cloths the direction of the twill line is reversed. While this modifies the boldness of the twill, because of the long float employed in this weave, the twill line is still prominent. When made this way, these cloths have the appearance of a ply-warp gabardine in so far as the way the twill runs.

Finishes used: Mercerized, napped (back), water-repellent, preshrunk; usually bleached or dyed sulphur or vat colors.

Uses in finished state: Riding habits, raincoats, uniforms, bathing trunks, sportswear, skirts, slacks.



J. P. Stevens & Co.

Nine-Harness Tricotine (Finished) 40″, 110 x 76, 1.75 yd.

Warp yarns: 15s, 17s, 30/2, 40/2
Filling yarns: 15s to 26s

Examples of gabardines:

40″ 112x74 1.50 combed warp, carded filling
40″ 124x74 1.60 combed warp, carded filling
40″ 130x80 2.50 all combed
40″ 112x76 1.70 combed (ply warp—right twill)
34″ 120x80 1.90 combed (ply) warp, carded filling (right twill)
40″ 120x72 1.75 combed (ply) warp, carded filling (right twill)
39″ 110x76 1.65 combed warp, carded filling (right twill)
37″ 120x76 2.90 combed warp, carded filling (right twill)
37″ 124x72 2.75 combed warp, carded filling (right twill)
38″ 108x72 2.84 combed warp, carded filling (right twill)
37″ 144x80 3.25 combed (twill to right instead of to left)
39″ 112x80 1.65 combed (twill to right instead of to left)
38½″ 110x76 1.65 carded
33″ 110x76 1.95 carded
34″ 108x64 1.80 carded
39″ 124x72 1.48 carded
39″ 118x72 1.80 carded
39″ 112x64 1.75 carded
40″ 110x76 1.75 carded

Tricotine

Tricotines are also known in the trade as *cavalry cords* and are one of the steeper warp twills. They are made with distinctive double-twill lines at an angle of 67½°, from both all-combed and all-carded yarns. The warp yarns can be ply or single; the filling yarns are usually single. The yarns and count of the cloth are very similar—and in some cases identical—to those used in gabardines. As in the latter, the twill is upward to the left, except when ply yarns with reverse twist are used, when the twill is made to run to the right. There are some constructions in which single warp yarns are used, and where the twill line runs to the right instead of to the left. These cloths, however, while they have an appearance of ply-warp cloths, do not have as bold a twill effect as the usual left-hand twill. Tricotines are usually made with nine harnesses, and the weave repeats on nine ends and eighteen picks. In weaving, each warp end weaves as follows: over five picks, under two, over one, under two, over five, under one, over one, and under one. This produces a very close twill or double-line effect.

Finishes used: Usually mercerized and bleached or dyed in sulphur or vat colors, often preshrunk.

Uses: Sportswear, uniforms, slacks, bathing trunks, etc.

Examples of tricotines: 40″ 110x76 1.75 carded; 40″ 112x64 1.70 all combed, ply warp, right twill.

INSPECTING and TESTING

To insure precision operation of modern mills, discussed by R. J. McConnell in paper before S. T. A. group.

"THE successful business of the future will be one of accuracy and precision," said Robert R. West, president of Riverside & Dan River Cotton Mills, Inc., in an address before the annual convention of the Southern Textile Association last summer. This theme was amplified in detail by R. J. McConnell, general manager of service, Whitin Machine Works, Whitinsville, Mass., when he spoke on general mill practices at the fall meeting of the Tennessee Division of the Southern Textile Association, held Nov. 7 at Knoxville.

Tracing the development of the industry since he entered it in 1907, Mr. McConnell pointed out that in the early days it was a simple matter to operate a mill, as there were innumerable doublings in the preliminary processes which covered careless manufacturing, and a good margin of profit to take care of wasted motion. Today, each preliminary process must be operated at as near perfection as possible, and the margin of profit is extremely small.

Regular Periods for Inspection

"The best way to insure proper mechanical conditions," said Mr. McConnell in part, "is to have forms made for each different kind of machine and have regular periods for inspecting certain parts—the fixer, the grinder, or the section man checking the parts for wear and passing the form to the second-hand when the inspection cycle is completed, and the second-hand in turn passing it to the overseer. At certain periods, the second hand should "over-inspect" parts that have been checked by fixers and make his returns on a similar form and pass it in to the overseer. In this way, the inspection will be more than perfunctory, because the overseer will be the one to compare. In making these inspections, there will have to be some agreed-upon point where worn parts shall be replaced. For instance, bolsters on spinning should be replaced when worn more than .003 in., and a front steel roll should be repaired when it runs out more than .005 in. It is absolutely necessary that whatever tolerances you decide upon shall be understood and shall be specific, so there will be no chance for argument or excuse.

When a system of this kind is started in a mill, for a time the repairs increase; but, in the long run, with an inspection system the cost is lower. It takes some time to decide upon tolerances, and great care should be taken to make sure that worn parts are not taken out too soon or kept in too long. This knowledge can be had by making tests and finding the effect of worn parts on quality and production. For example, I found out that my labor cost for everything in a spinning room amounted to $2.00 per year per revolution of the front roll, single-shift basis, on each spinning frame. So I had the speed of the front rolls checked at frequent intervals; and, if the speed was down to two revolutions from standard, I would have the pulley on the motor driving shaft changed. These pulleys were made of paper or wood; and they would wear down after a while, causing the loss in speed of the front roll.

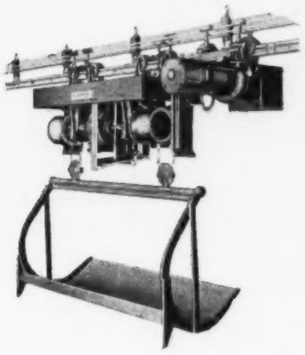
"Some of the larger mills have very well organized maintenance systems with mechanical engineers in charge, and all matters pertaining to mechanical upkeep are taken care of by this department. But any mill, regardless of size, can develop a system of inspection and maintenance that will guarantee proper mechanical condition of the machinery.

Day-to-Day Testing

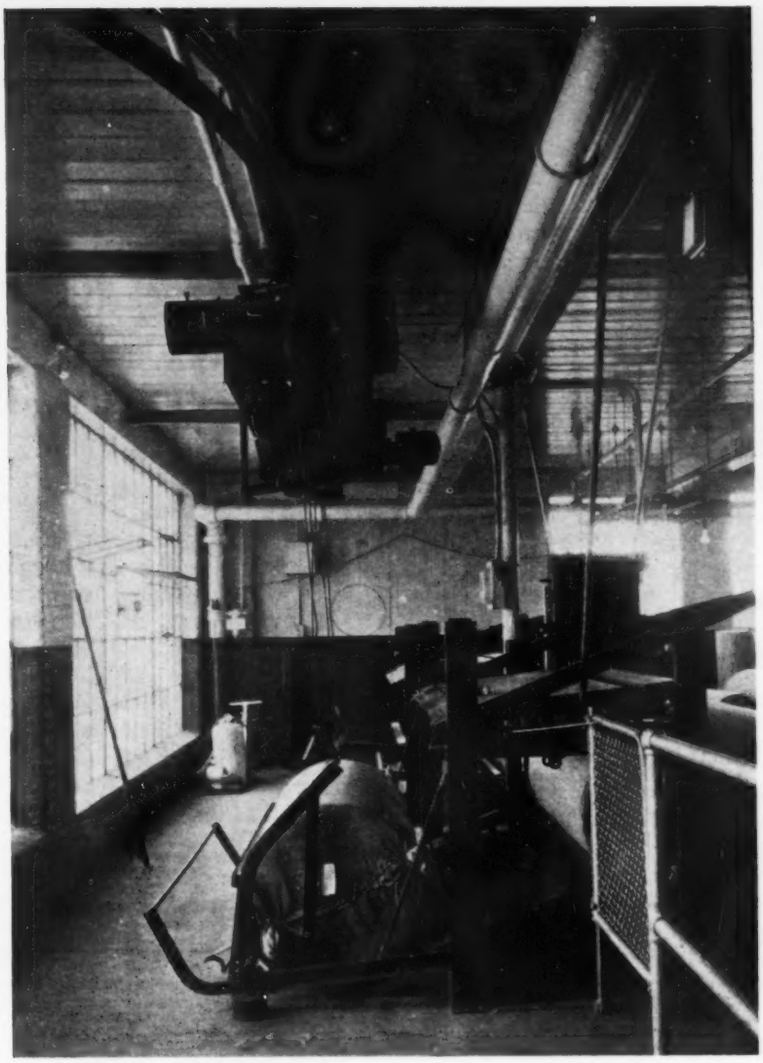
"Every mill should have a special room for weighing and breaking. It need not be elaborate but should have humidity and heat control so that the day-to-day sizings and breaks will be relative. A great deal of money can be lost by not having proper equipment for testing. No mill can afford to be without proper testing equipment. In addition to reels, grain scales, and power yarn-breaking machines of the skein type that can also be used for breaking cloth, the mill should have a Belger roving tester and a Saco-Lowell sliver tester. The last two machines, if properly used, are of great help to the carder in regulating tension and making proper roll settings. The roving tester gives a graphic picture of the amount of twist in roving and evenness of tension, and the sliver tester will record the effect of changes in draft distributions and roll settings. The latter not only saves a lot of time, but takes this phase out of the guessing and judgment era.

"Specialization has not been taken up very generally in carding and spinning. There are some mills that specialize on the cards by having hands who do nothing but strip; tenders who clean, oil, and operate cards; and, in some of the very large mills, special can doffers. It might interest you to know what proportion of time is involved in the different card operations. (These figures are approximate and vary with the production of the card.) The production was 15 lb. per hour on the job where these figures were compiled. On that job, 22% of the time was spent for stripping, 15% for creeling, putting laps on stands, etc.; 13% for doffing; and 50% for cleaning and oiling. As competition increases, it may become necessary to do more along the lines of specialization in the carding and spinning departments. If it does, it will be necessary to know more about the actual time involved in doing certain parts of the work than is now known. It will require time and study and cooperation. Whether or not specializing comes, this knowledge should be acquired by the overseer in charge of the job so that he will have a better appreciation of what each job actually is with regard to the amount of labor expended."

At right: Rolls of fabric weighing as much as 1,000 lb. are quickly and efficiently conveyed up a 9% grade, and selectively distributed to seven delivery stations in the warehouse and one at a truck-loading platform between the mill proper and the warehouse.



Above: Travel is accomplished by means of the Mono Tractor drive, which consists essentially of a gear-motor unit with a special tire mounted on the output shaft, all supported by a simple frame and trolleys. The conveyor is designed to stop and register within plus or minus 1½ in. at loading and unloading stations.



CONVEYING SYSTEM

Eliminates manual handling of 1,000-lb. rolls of fabric at Firestone Cotton Mills

By

W. B. Earley

Industrial Engineer
Firestone Cotton Mills, Inc.

and

F. C. Harris

Chief Engineer
American Monorail Co.

AS any initial objective in a recent campaign to simplify the handling of materials, the management of Firestone Cotton Mills, Inc., Gastonia, N. C., determined to reduce the cost of transferring finished rolls of tire fabric from the cloth room to an adjoining warehouse.

These rolls of fabric weigh from 650 to 1,000 lb., measure 60 in. maximum length, and are from 24 to 30 in. in diameter. From 100 to 150 rolls are woven an 8-hr. day. After being weighed and graded in the cloth room, these rolls must be transferred to the warehouse and held there until released by the laboratory which tests samples from each roll. This transfer, formerly handled manually on two-wheel trucks, required nearly 1,000 ft. of travel—including crossing under a railroad siding and climbing to higher level.

In designing a mechanical system to do the job, although the distance was reduced to about 300 ft., the engineers had to overcome these same grade difficulties, along with a headroom problem at two double-decked loading tables where rolls are picked up. It was found that special controls would be required to accomplish complete automatic pick-up from either of the two loading tables, as well as to insure selective distribution to seven delivery stations in the warehouse and one at a truck-loading platform between the two buildings. Means were required to permit reversing the action later for delivery from the warehouse to an elevator in the cloth room for loading cars on the railroad siding.

To meet the complex requirements of such an automatic carrying and distributing system, American Mono-Rail Co. made adaptations of its present carrying equipment and designed additional special controls and devices. The equipment, as installed, consists of two special double-decked devices for automatically loading rolls onto the carrier, a cradle-type roll carrier with electric hoist and standard MonoTractor drive unit, a special control panel, together with limit switches and other controls, and the regular MonoRail electrified-track equipment with supports.

From the looms, the rolls of fabric are placed on tables running the length of the room and are moved along to a balance where they are weighed and wrapped. The fabric is then rolled along to the loading tables, which are inclined sufficiently to permit partial gravity feed into

toggle and lever automatic loaders. When the carrier lowers its cradle and registers against a bar, it trips the levers and releases a single roll into the cradle, at the same time preventing the next roll from going forward. Then the carrier cradle raises its load and the toggle goes back to its original position to receive the next roll in line. Provision is made for the same action over both upper and lower tiers of rolls, but at the present time only the lower is operated.

Dispatcher Panel

The dispatcher panel is the center of control for the entire carrying system. It is arranged with a series of 40 horizontal bars, each having two sliding square Bakelite selectors. The one on the right moves only one place to the left or right, indicated "A" and "B". The other moves eight places, with an additional position marked "S" for stop. There are seven places for delivery to warehouse stations and one marked "P" for a truck loading platform. The right-hand selector controls pick-up from either loading table "A" or "B."

Normal method of operating the dispatch panel is as follows: Before starting the system, the operator raises the horizontal indexer, shown in back of the horizontal bars, to the top of the panel with the crank on the top of the right side of the panel. He then starts with either table, setting the right-hand selectors to pick up from the table, and setting the left-hand selectors for the proper unloading point—continuing for the number of rolls to be carried. After seting up the required number of trips for one table, he continues down the panel for the other table, putting the right-hand table selector in proper position. As many as 40 rolls can be dispatched and selectively distributed from one setting of the controls.

After setting the panel for as many trips as required, the operator is ready to start the system by turning the switch on the left side of the panel to the "Start" position. The carrier then goes through each cycle of operation indicated on the panel, picking a roll from the selected table and depositing it in the warehouse at the selected station, returning again for another and continuing as far as controls are set up.

A "Stop" position is included on each horizontal bar in the panel so that the operator can set up a desired number of trips and have the carrier stop as it finishes these trips, at the same time lighting a signal on top of the panel to indicate that it is ready for resetting.

Automatic Carrier Unit

The carrier unit is a cradle-type carrier built to hold various sized rolls and to unload by gravity upon striking a tipping bar. It is attached to a twin-drum hoist equipped with specially designed spring roller guides to keep the cables when slack in the drum grooves.

The travel is accomplished by the use of the MonoTractor, a recent development of the American MonoRail Co. The MonoTractor consists essentionally of a gear-motor unit with a special rubber tire mounted on the output shaft, all being supported by a simple frame and trolleys. The rubber drive wheel is inflated against the bottom of the rail, and, with the 1½-hp. motor, effective and simple traction is obtained to climb the 9% grade in this MonoRail system. Further, it makes accurate stopping and registry (within plus or minus 1½ in.) at loading and unloading stations easy to maintain.

For automatic operation, special switching and reversing controls operate the hoist and start the MonoTractor drive on its trips.

POWER SHOW

Displays new equipment in attractive settings

TIME was when exhibitors at the National Power Show thought they were being very decorative if they draped a few yards of pallid cheesecloth about the booth. At the twelfth affair, however, which was held in New York, Nov. 30 to Dec. 5, developments of the last two years were given an effective modern background of color and lighting in practically all of the booths.

There were a number of exhibits of particular interest to textile men, in addition to the general power engineering developments. Variable-speed units were prominent. One recent model has a constant-speed motor built in as an integral unit with a variable-speed transmission. The unit was exhibited in a hook-up with two dancer rolls and wound cloth at a uniform tension and at a uniform surface speed. The same arrangement can be used for range finishing. Another newcomer in the variable-speed field employs a carrier, three tapered rollers, a ring gear, and a contact gear to give speeds from half motor speed, through zero, to reverse.

In the unit heater line, one featured a core that allows lint and fly to pass through, a second utilized a fan with an overlapping ring which was stated to increase efficiency (fans of similar design with fully protected motors are suitable for dyehouse ventilation), and a third had the heating unit mounted horizontally and made use of a revolving discharge.

Another item of particular textile interest was a predetermined counter. This counter can be set at any given number (yards, picks, etc.) and the instrument hooked up through an electric current to stop the machine when the total is reached. A convertible two- and three-shift pick counter was also featured. Another loom accessory was a mounting of special cork, designed to fit under the feet of the loom and reduce vibration.

There were many elaborations and refinements in the lines of control and recording instruments that were shown, with emphasis placed on the systematic engineering of a particular problem. In slashers, for example, manufacturers feature a complete control system. New models of pyrometers, overfire pressure controllers, etc., were shown. One manufacturer featured a line of photo-electrically balanced potentiometer pyrometers, and another a new industrial thermometer tubing giving greater visibility.

In the general field, one of the interesting exhibits showed a new conveyor system, suitable for handling coal, etc., and even liquids. Essentially the system makes use of a split rubber hose with plugs or flights; the diameter depends on the capacity desired. One half of the hose is run under a hopper and filled. Another conveyor totals, records, or proportions the weight of coal or coke handled on an endless belt.

CONTINUOUS DRYER

Built abroad for staple rayon has other textile applications

By F. K. Howell
Buell Engineering Co., Inc., New York

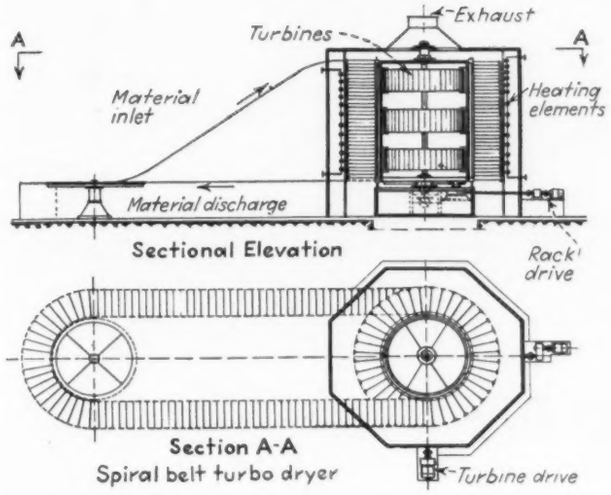


Diagram of continuous dryer for staple rayon and other textile materials.

AN early process for production of staple rayon involved reeling of the filaments on swifts in the form of skeins, which were then removed, washed, desulphurized, bleached, lubricated, and dried. The cutting operation followed centrifuging and drying in chambers; subsequent fluming of the fibers was necessary to loosen them; then another centrifuging and drying were required. This constitutes a batch process, and is little used on account of its cost. Later a semi-continuous process was evolved; and still later a wholly continuous process was developed, in which the filaments issuing from the spinneret are cut, then pass through preparation and desulphurizing baths. The cut, washed fibers are flumed (i.e., hydraulically transported in open troughs) to a screen belt for preliminary draining, then hydro-extracted mechanically by a centrifuge or squeeze rolls before they are dried.

There have been various developments abroad in the design of dryers (of the belt type) for continuous handling of cut staple. In one of the latest systems, the filaments are cut as soon as they issue from precipitation bath and are then flumed automatically in a succession of preparation and desulphurizing baths, being finally continuously deposited in a web, which is carried over a screen drainage belt, through squeeze rolls, and thence directly to the dryer belt. The belt turntable outside the dryer proper acts as a feeder for the continuous wet web, and, at the same time, provides a suitable means of continuous discharge for the dried mat. This dryer is shown in the accompanying illustration.

Features of Equipment

A feature of the equipment is the endless flexible galvanized wire belt carried on a traveling chain. If one imagines a flexible wire wound around a cylinder and unwound from the cylinder at the same time the cylinder turns, it will give an idea of the motion of this carrier chain. The chain supports a flexible belt on arms equipped with rollers riding in helical guides at the outer periphery of the belt. By reason of a fixed bottom helical guide of one turn, with pitch equal to the vertical belt spacing, the bottom delivery and top intake of the belt are kept at constant elevation. The belt moves in unison with the carrier drum, the belt standing still with respect to the drum. Hence, the power required to move the conveyor through the dryer is only that required to turn the drum.

Capacity of the dryer is 16,500 lb. of dried material per 24 hr., on the basis of 200% moisture (dry basis) in the staple entering the unit and 6% moisture leaving. Horsepower consumption per lb. dried product per hr. is 0.029; steam consumption is 2.9 lb. per lb. dried product. Length of unit is 21 ft.; width, 21 ft.; height, 30 ft.

In this dryer, the air, which is supplied by a turbo-fan system designed to waft air gently across the fiber mats, flows upward counterflow to the passage of the material. Heat input at different elevations may be graduated and balanced against rate of evaporation, so that the moisture is carried away only as fast as it diffuses to the surface of the material, thus avoiding any possibility of over-drying. Furthermore, temperature and humidity can be maintained at the optimum for each level. The heat economy is a maximum as a result of reheat recirculation and counterflow.

Conditioning Zone

A conditioning zone has been included below the dryer chamber, in which staple is brought to a uniform final moisture of 11%. In some cases, a card is used following the drying zone to loosen the fiber. In this event, a rehumidifier is employed instead of the conditioner.

Parallelism and stagger of the fibers are secured at the point of formation of the web. Since there is no disturbance of the fiber from the time it is flumed until completion of its passage through the dryer, this properly formed web is ready for carding, drawing, and spinning immediately after discharge. Travel through the dryer is accomplished without breakage or loss of fiber, and the crimped form of the fiber is not impaired. Staple differing with respect to length, denier, luster, and grade of filaments can be fed to the dryer successively without intervening shutdown for cleaning, and material of altered specification can be run into the dryer with only a short gap on the belt between the two lots.

The dryer can be built with traveling trays mounted on the carrier arms instead of the flexible belt. The alternative constructions offer attractive possibilities for the drying of a considerable number of textile materials in addition to staple.

Abstract of a paper presented Dec. 2, at the annual meeting of the A. S. M. E. in New York.

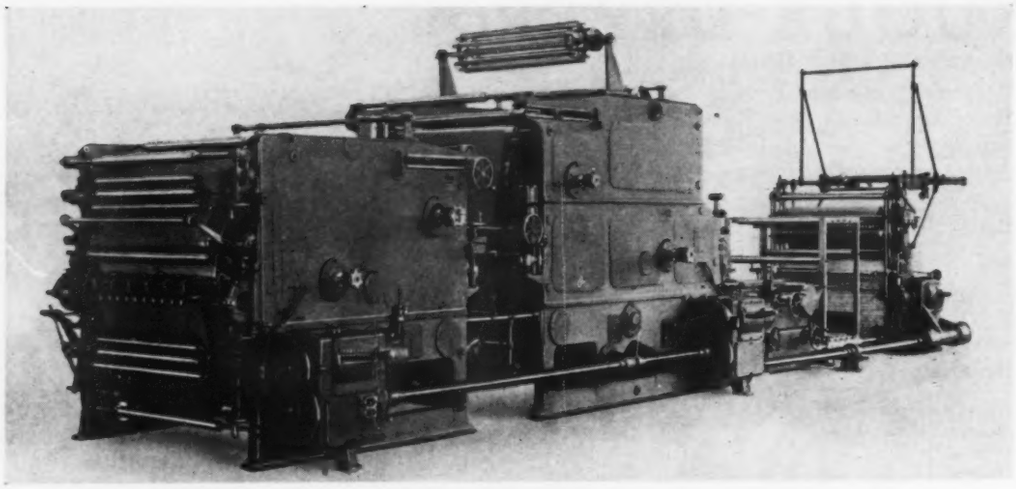


Fig. 1. (at left) Duplex Sanforizer of most modern type.

Fig. 2. (at right) Sanforizing range of type in commercial use in 1931.

SANFORIZING TODAY

Process and equipment differ radically from those employed five years ago

By Clifford H. Ramsey
Morrison Machine Co., Paterson, N. J.

ONLY six years ago, Sanforizing was looked upon as an experiment. In 1930, only 364,000 yd. of cloth were Sanforized-shrunk. There were but three Sanforizing units in operation. In 1935, the gross yardage rose to 300,000,000 yd., and 80 machines were in use, in 51 plants. Thus, in five years the production of Sanforized-Shrunk goods increased over 824%.

The Sanforizing process and machinery as used commercially were described in a paper by Sanford L. Cluett, at the 50th anniversary meeting of the American Society of Mechanical Engineers, in December, 1931. The Sanforizing range of that period is shown in Fig. 2. Since then improvements of major proportions have been made in Sanforizing equipment. A complete Duplex Sanforizer of the most modern type is shown in Fig. 1.

The first unit is called the hold-back or feeding machine. It consists essentially of a pair of draw rolls, before which are mounted suitable tension devices and cloth guiders. This and each modified Palmer unit are equipped with quick-change gear boxes to keep them in dependable relation to one another appropriate to the amount of shrink the fabric being processed requires.

Immediately following the feeding machine, and attached to it, is a set of atomizer heads for spraying a fine mist of water on the top, or bottom, or both sides of the fabric, as its nature requires. Thence, the cloth passes over a system of steaming pipes, which, together with the atomizers, renders the cloth plastic and susceptible to the changes about to take place. A recent improvement in the steaming chamber is a skying device consisting of a bronze frame, in which are eleven brass rollers, mounted on solid brass shafts and running on stainless-steel ball bearings. With the use of the skyer, the cloth remains much longer in the moistening area, which promotes a materially increased plasticity.

The next unit, which is sometimes dispensed with, is a clip expander. This resembles a miniature tenter, having small automatic clips for gripping the edges of the fabric. By its use, the fabric may be kept accurately to uniform and exact predetermined width within the limits of the cloth being processed.

The machine is fitted with flanged wheels and rides on a track. It is connected to its power source by a telescopic shaft and requires no disconnection when moved back and forth. The tracks are provided on both ends with stops to prevent travel over-run, the operating and stop being adjustable to facilitate setting the expander in precise relation to the shrinking element. The clamping bracket acts as a support for the telescopic shaft envelope and also as a lock to hold the expander in either an off or on position.

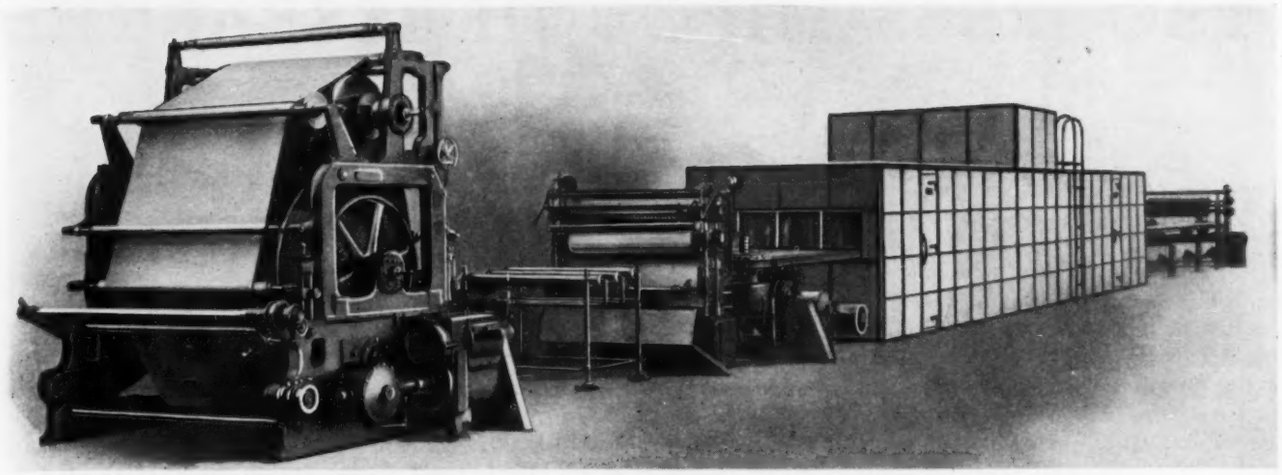
The expander is moved back and forth by the handwheel with great freedom. It will, no doubt, be obvious that the motion, back and forth, is to provide for ready access to the shoes and shoe area to facilitate adjustments and replacements of shoes, feed rolls, and blanket of the Palmer. Vertical adjustment of the plane of the chain travel is also important; hence the expander frame is hinged at the entering end and provided with means for raising or lowering the delivery end as required. The machine may be, and frequently is, equipped with automatic electric guiders on its entering end.

The next unit is a modified Palmer which is utilized to shrink the fabric in length, as shown graphically in Fig. 3.

The cloth is laid on the blanket at the point of greatest expansion and made to adhere thereto by the pressure of the electrically heated ironing shoes superimposed thereon. The shape of the shoe is such as to hold the cloth in contact with the expanded element until it contacts the setting element or drying cylinder moving down to receive it. The surface of the blanket, contracting as its curvature reverses, shrinks the web adhering to it in direct proportion.

The shrink here obtained always will be the same for any given thickness of blanket and will exceed the amount necessary to meet the potential wash-shrink dimension. However, the surface speed of the drying

Abstract of a paper delivered December 2, in New York, at the annual meeting of the Textile Division of the American Society of Mechanical Engineers.



cylinder, through adjustable gear connections, is made appropriate to the definite shrink required and will pull out the fabric by warpwise tension just enough to correct this overshrink.

On the entering end of the modified Palmer unit there is set up a suitable spreading device, of an adjustable type, inducing the introduction of the cloth to the flexed shrinking element in proper width and free from wrinkles or scrimps. Between the feeding machine and the spreading device, the cloth, in its plastic condition, is held under tension warpwise to an extent necessary to crinkle the filling threads sufficiently to meet or slightly exceed the previously determined wash-shrink potential dimension, the spreading device bringing it to the exact width required and delivering it to the warp-shrinking element without further change in this particular.

Blankets of varying thickness are used to accomplish definite shrink requirements. All blankets are subject to wear and reduction in thickness in use; therefore, to keep perfect contact between the shoes and the cloth, a

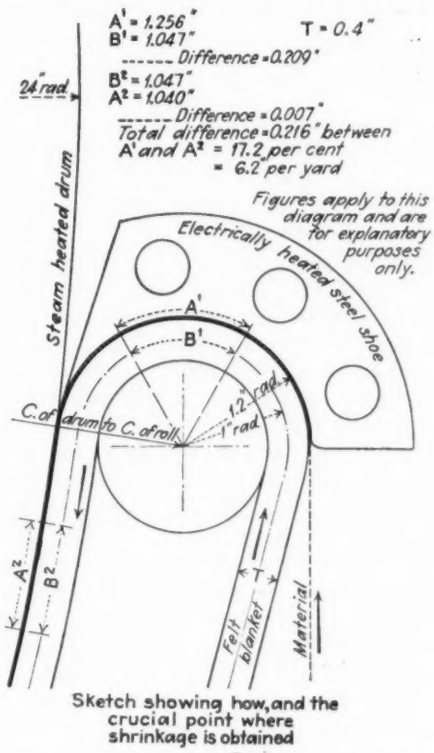


Fig. 3. Diagram showing how shrinkage is obtained on the Palmer.

series of feed rolls is supplied, ranging in diameter in increments of $\frac{1}{32}$ in., the resilience of the blanket rendering more minute increments unnecessary.

The electrically heated shoes are thermostatically controlled, with a 15° F. differential. The shoes remain in contact with the cloth or blanket only while the machine is in motion. If, for any reason, the machine stops, but not until it comes to a full stop, the shoes automatically rise from the operating position, precluding the possibility of scorching the fabric or blanket. They return to operating position coincidentally with the machine starting. As the shoes lift, the current automatically shuts off and comes on again as they descend.

A motor-driven guide roll, actuated by a mercury switch with suitable detector fingers, holds the endless blanket near the center of the cylinders, allowing a very small and fully permissible lateral movement.

The processed fabric leaves the cylinder and blanket accurately shrunken in both warp and filling to its potential wash shrink and permanently set in this condition.

At this stage, the cloth will have an entirely different surface on one side than on the other. On several fabrics this is satisfactory; on many others it definitely is not. Therefore, in the Duplex Sanforizer there has been added an additional smaller size modified Palmer, sometimes called a Reverse Finisher. Between the two modified Palmers there is mounted an atomizer discharging a fine spray. The cloth passes down over this atomizer, where the side which has been against the blanket on the first machine is slightly moistened, usually not sufficiently to penetrate the fabric; goes beneath the second modified Palmer; and up and around the heating cylinder with the moistened face against the cylinder, securing an equally acceptable, smooth finish on both sides.

The Duplex unit can be, and often is, fitted with a reverse mechanism. This permits of threading the cloth over instead of under the Duplex unit, thereby keeping the same side of the fabric against the cylinder in both units. A simple motion of one lever reverses the Duplex unit both mechanically and electrically.

The gear box on the feeding machine has seven change gears, controlling the shrink in increments of 1 in. per yd., while that on the modified Palmer has three shrink gears in increments of $\frac{1}{4}$ in. per yd. From this, it will appear that any shrink the blanket is capable of producing from zero to $7\frac{3}{4}$ in. per yard, in increments of $\frac{1}{4}$ in. per yard, is readily obtainable. In addition, gears securing actual stretch of the fabric, as well as perfect synchrony of the units, are also provided.

PROGRESS THROUGH RESEARCH

Is keynote sounded at annual meeting of textile chemists

IT is usually the first speaker who strikes the keynote of any meeting. But, as we all know, chemists are always trying to find some new way of doing things. And so at the sixteenth annual meeting of the American Association of Textile Chemists & Colorists, held Dec. 4 and 5, in Providence, R. I., it was the eighth speaker on the program who sounded the keynote. Answering the question: "Are We Making Any Progress in the Textile Industry?" A. W. Buhlmann, of A. W. Buhlmann, Inc., drew with facts and figures a vivid word picture of the advances which are taking place in textile manufacturing and processing. Preceding and succeeding speakers, without exception, elaborated on this theme, showing the progress which has been made recently in specialized fields. A noteworthy display of fabrics lent by mills in Rhode Island and its vicinity gave further evidence of the advances in dyeing, printing, and finishing.

The technical sessions opened on Friday evening with a paper by Miss Bernice E. Jamieson, Rhode Island School of Design, on art in textile design. After commenting briefly on the remarkable advances made in the last ten years by textile designers, Miss Jamieson, stated that the best of American designs are as good as French designs. In Europe, however, the textile industry capitalizes on the fame of the designer—places his name on the selvage of the fabrics. In this country, we are not giving due recognition to the textile designer; we are not exploiting American designs by American designers. Fabrics created by the foremost designers carry on the selvage not the designer's name, but just the words "Fast Colors." The textile industry should have a research department with a staff of experienced designers further to develop original American designs.

Control of Mercerization

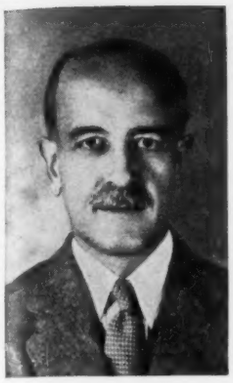
On Saturday morning, Sidney M. Edelstein, A.A.T.C.C. Research Associate, at University of Chattanooga, described the methods which are available for the study and control of mercerization. In his investigation, Mr. Edelstein is using apparatus which permits yarn to be mercerized, washed, and dryed under controlled conditions. For determining the dye affinity of mercerized cotton, both the pyridine method and visual examination are employed. Total degree of mercerization can be found by the barium-activity method. Degree of luster can be determined by visual examination and by means of a photo-electric instrument. While no instrument has been developed which will show all the factors seen by the eye, the apparatus will give several figures which can be added to give a comparison of the degree of luster on two or more samples of similar materials.

Discussing the measurable properties of printing pastes and thickeners, Dr. Sivert N. Glarum, A.A.T.C.C. Research Associate, at Brown University, described the use of the Stormer viscosimeter for determining the flow curve or fluidity curve of these materials under various stresses. As noted previously in TEXTILE WORLD, Dr. Glarum has been able to establish flow-curve zones within which a printing paste must fall if it is to give satisfactory results on the printing machine. More recently he has studied various starches, gums, and other thickeners, and has established flow curves for these materials. It is now possible to compare thickeners for body, false body, length, shortness, etc.; to predict how a thickener or paste will act under given conditions; and to select a paste which will give any effect wanted.

"Much that has heretofore passed as knowledge must be unlearned," said C. V. Caesar, Stein, Hall, & Co., Inc., in a discussion of the fundamental properties of starch. In the past students have over-stressed the chemical aspects of starch and have neglected the physical aspects. Earlier investigators held that the starch granule consists of an insoluble coating and a water-soluble filling. Today it is believed that the starch granule is chemically the same throughout, but that the miscelles making up the outer layers are more tightly packed together, and hence are more difficult to hydrate. When starch is placed in warm water, the water penetrates through the outer layer, and comes between the chains of miscelles of the inner layers. These chains swell, and break apart, and the inside of the granule spills out of the casing. Mr. Caesar then described the Consistometer, an instrument for measuring some of the physical properties of starches, and presented charts showing the gelatinizing temperatures and pasting properties of eight starches commonly used in textile processing.

Evaluation of the chemical tendering of cellulose by cellulose-viscosity measurements was advocated as a routine-test for control of process, production of quality, and establishment of trade specifications for cotton yarns and fabrics, by F. H. Guernsey and L. T. Howells, Cowles Detergent Co. This method is recommended as a supplement to the usual tensile-strength tests, which may not disclose chemical tendering. The procedure consists briefly of dissolving a ½-gram sample of the material in a standard cuprammonium solution contained in a special type of viscosimeter and then determining the fluidity of the solution. Since the fluidity of the solution varies directly with the degree of chemical damage, "Chemical Tendering Units" and an "End of Service Point" can be set up. Thus, cotton having a mild bleach would have a C.T.U. of 1 to 5; that normally bleached, a C.T.U. of 5 to 10; absorbent cotton, 10 to 20; over-bleached cotton, 20 to 30; cotton showing incipient loss of fiber structure, a C.T.U. of 30 to 40.

Six applications in the textile industry for the spectrophotometer, as outlined by Prof. Arthur C. Hardy, Massachusetts Institute of Technology, are as follows: It permits the measurement of color and the establishment of color standards which can be maintained for long periods of time; it gives a new insight into the behavior of dyes and pigments in mixtures; it permits one to distinguish the difference between colors which look the same to the eye under one illuminant and not under another; it gives the ability to detect new color phenomena; it allows the graphic representation of color; it promises the possibility of synthesizing new dyes to meet specific purposes.



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OFFICERS OF AMERICAN ASSOCIATION OF TEXTILE CHEMISTS & COLORISTS

In pointing out the progress which is being made in the textile industry, Mr. Buhlmann in his address cited a number of the most recent technical developments and emphasized that to get a true picture it is necessary to consider the advances in all branches. In the last year 600 patents have been granted in the textile field, in addition to 800 design patents. There are still unlimited possibilities for further progress through fundamental and applied research.

Chemistry of Dyes

Speaking on the chemistry of stabilized azoic dyes, Dr. H. A. Lubs, E. I. du Pont de Nemours & Co., defined these compounds as mixtures of a stabilized aromatic diazo body with a coupling component, such as a betahydroxy naphthoic acid anilid derivative. The basic information on these dyes was available by 1900, but it was about 30 years later before the products could be made commercially available. These printing colors are now obtainable in a fairly wide range of shades of reasonable fastness. As yet the fastness of properly selected vat colors has not been attained, but the final development has not been reached and new and better dyes can be expected.

The influence of structure on the color, dyeing properties, and fastness properties of mono-azo naphthol and naphthylamine sulphonic acid dyes was discussed in a paper by Dr. Wallace R. Brode and Dr. Marion E. Griffith, Ohio State University. Isometric series of these dyes were prepared, the colors measured, and dyed swatches tested for fastness to light and washing. This study has shown the relationship between the structure and the color and fastness properties, and has made it possible to indicate the structure of unknown dyes of similar character and to predict their properties.

Researches on wool have not reached the stage where it is possible to state certain conclusions as facts, rather than theories, asserted Dr. Milton Harris, A.A.T.C.C. Research Associate, at the National Bureau of Standards. It is now known that cystine is distributed throughout the wool molecule. This group contains an -S-S- linkage, which is very reactive. As soon as the linkage is broken, the wool is destroyed. Wool originally contains about 3.6% of sulphur. When treated with alkali, this drops to 1.8%. The disulphide linkage is also attacked by oxidizing agents.

The basic groups found in wool account for the absorption of acids and acid dyes, while the acidic groups account for the absorption of alkalis and basic dyes. The basic groups react with dilute sulphuric acid to form a reversible combination which facilitates acid dyeing, and with concentrated sulphuric acid to form an irreversible combination which inhibits acid dyeing and which is the cause of resists produced during the carbonizing process.

Development of colloidized vat dyes was described in a paper by Dr. M. L. Crossley and R. H. Kienle, of Calco Chemical Co. A colored motion picture showed the method of preparing these dyes and the way in which they act after colloidization. The properties of colloidized vat dyes which make them particularly advantageous are as follows: completely dispersible in water, uniform particle size, tendency to be self-dispersing, non-hygroscopic, anti-dusting, low bulk, and unaffected by electrolites in aqueous media.

Stainless steel came up for attention at the Friday evening session, when a moving picture showing its manufacture, fabrication, and uses was presented by Curtis C. Snyder and George W. Hinkle, of Republic Steel Corp. During this presentation it was brought out that in 1930 25 to 30 tons of stainless steel was used in the fabrication of textile equipment; this year 1,000 tons valued at more than $1,000,000 will be used. On Saturday the suitability of stainless steel as compared with other metals in bleaching was discussed by Joseph E. Goodavage, of Philadelphia Textile School, for Republic Steel Corp. According to Mr. Goodavage, laboratory tests have shown that bleaching with peroxide and with hypochlorites can be carried out successfully in stainless-steel equipment. Soldered joints should be avoided and copper fittings are not desirable in bleaching. Stainless steel equipment is being used commercially for bleaching cotton packages, and a kier is now being constructed for use in peroxide bleaching of cotton fabrics.

Speakers at the annual banquet held Saturday evening were Theodore Francis Green, governor of Rhode Island; James E. Dunne, mayor of Providence; William H. Cady, president of A. A. T. C. C.; Prof. Louis A. Olney, Lowell Textile Institute; and John Nicol Mark. Arthur R. Thompson, Jr., Ciba Co., Inc., presided. The meeting was held under the auspices of the Rhode Island Section, John G. Mason, Rosemont Mill, chairman.

Officers re-elected are: president, William C. Cady, U. S. Finishing Co.; vice-presidents, Elmer C. Bertolet, Philadelphia Textile School and (newly elected) Alban Eavenson, Eavenson & Levering Co.; treasurer, William R. Moorhouse, National Aniline & Chemical Co.

Many counts from few rovings is object of this

SHEETING-YARN ORGANIZATION

By Gilbert R. Merrill
Lowell Textile Institute

THIS IS the eighth article of the series on cotton-yarn organizations which began in the May issue. It includes an osnaburg organization. Professor Merrill will continue next month with a discussion of the calculations necessary for determining the amount of machinery required at each process.

THERE is considerable variety in the coarser sheetings, especially as to weight per yard. This is due partly to the variety of constructions and partly to the variety of counts. The weights vary from 2.50 to 5.00 yd. per pound, and the counts vary from 10s to 24s.

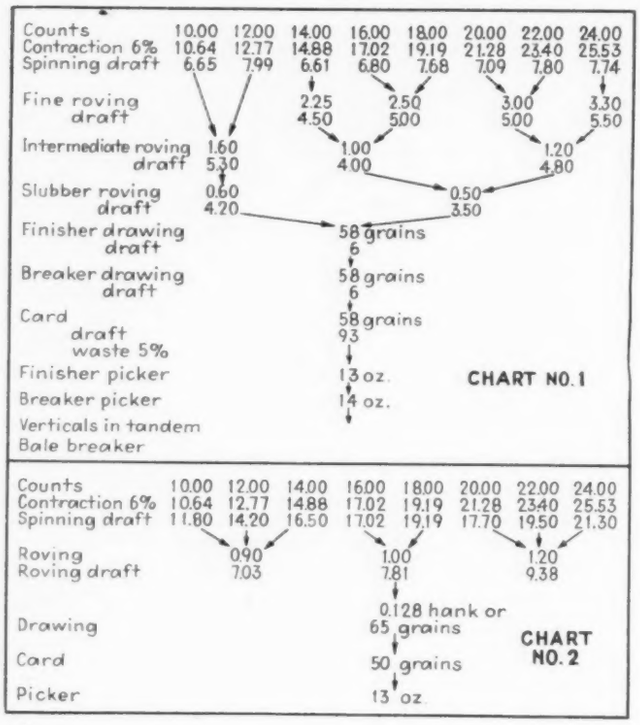
Some mills make all the common weights and constructions, which involves spinning a great variety of coarse counts. Inasmuch as the volume on various lines shifts from time to time, it is desirable to make as many yarns from one set of rovings as possible. This example is intended to illustrate how this is done.

The table below shows a series of the common coarser constructions and the price per yard of gray goods, spot southern, F.O.B. mill. An additional column shows the average counts of the yarns as found by the following formula: Average count = [(Ends + Picks) × Inches wide × Yards per pound] ÷ [(1% takeup) × 840.]

Coarse Sheetings

Construction			Price	Avg. Count
31 in.	48 x 48	5.00	6¼¢	19
36 "	48 x 48	5.00	6¼¢	22
37 "	48 x 48	4.00	7 ¢	18
36 "	48 x 48	3.00	8¼¢	13
40 "	48 x 48	2.85	9 ¢	14
40 in.	48 x 48	2.50	10 ¢	12
40 "	60 x 56	3.60	8¼¢	21
40 "	64 x 68	3.15	9¼¢	21
36 "	56 x 60	4.00	7¼¢	21
New York spot cotton (10/15/36)				12.45

The values of average counts give an approximate idea of the counts used in each cloth. Of course, if the warp is a little heavier than the average figure, the filling must be a little lighter than the average. Thus it is demonstrated that the counts may easily range anywhere from 10s to 24s.


Counts 10.00 12.00 14.00 16.00 18.00 20.00 22.00 24.00
Contraction 6% 10.64 12.77 14.88 17.02 19.19 21.28 23.40 25.53
Spinning draft 6.65 7.99 6.61 6.80 7.68 7.09 7.80 7.74
Fine roving draft 2.25 4.50 2.50 5.00 3.00 5.00 3.30 5.50
Intermediate roving draft 1.60 5.30 1.00 4.00 1.20 4.80
Slubber roving draft 0.60 4.20 0.50 3.50
Finisher drawing draft 58 grains 6
Breaker drawing draft 58 grains 6
Card draft 58 grains 93
waste 5%
Finisher picker 13 oz.
Breaker picker 14 oz.
Verticals in tandem
Bale breaker
CHART NO. 1
Counts 10.00 12.00 14.00 16.00 18.00 20.00 22.00 24.00
Contraction 6% 10.64 12.77 14.88 17.02 19.19 21.28 23.40 25.53
Spinning draft 11.80 14.20 16.50 17.02 19.19 17.70 19.50 21.30
Roving 0.90 1.00 1.20
Roving draft 7.03 7.81 9.38
Drawing 0.128 hank or 65 grains
Card 50 grains
Picker 13 oz.
CHART NO. 2

In this case, warp counts of 10s, 14s, 18s, and 22s, with filling counts of 12s, 16s, 20s, and 24s are assumed. The organizations given in Chart No. I may be slightly changed to get any counts in between. To simplify the layout, an average contraction of 6% is assumed for all counts. All are spun from single roving, with two roving operations for 10s and 12s and three roving operations for the others.

Long-Draft Modification: A mill making yarns of this general type was recently remodeled with long draft for both spinning and roving. The roving frames used were 10x5 intermediates arranged with slubber creels and long draft. In this mill, counts up to 14s were spun from 0.90-hank roving, 14s to 20s were spun from 1.00-hank roving, and yarns above 20s were spun from 1.20-hank roving. All these rovings were made from 65-grain drawing sliver, 50-grain card sliver, and 13-oz. laps.

While this mill did not spin exactly the counts used here, the organization shown in Chart No. II has been adapted to give the counts used in the regular draft organization.

Osnaburg Organization: There is considerable variation in osnaburgs, depending upon the use to which they are put. The osnaburgs going into cheap bagging are frequently quite dirty. These frequently have a percentage of willowed beater seed and fly in addition to card strips and some new cotton. The cleaner varieties, such as are used for shoe fabrics and rubber fabrics, will not have the beater seed and will be much cleaner.

There is a considerable range of constructions for osnaburgs, and the counts may be from as low as 5s to as high as 10s.

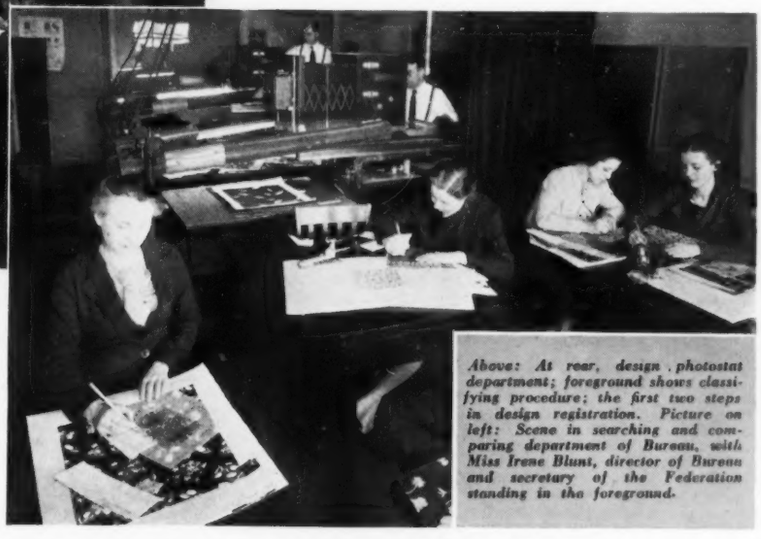
The sample used as a basis for this example was a 40-in., 2.56-yd., 32x28 construction made with 6.75s warp and 8.00s filling. The organization is laid out for the coiler waste system described in the first instalment of this series (TEXTILE WORLD, May, 1936, page 78).

One roving operation. No drawing process.	Warp.	Single roving in spinning. 8% and 7% spinning contraction.	Filling.
Spinning contraction 8%	.92) 6.75	7%	.93) 8.00
Spinning draft	5.63) 7.33		6.15) 8.60
Slubber draft	3.94) 1.30		4.20) 1.40
Finisher-card coilers	.333-hank or 25-grain finisher-card sliver ×4		
Finisher-card draft	100-grain delivered at finisher ×88.3		
Finisher-card waste 8%	.92) 8,830		
160 breaker-card slivers*	160) 9,600		
Breaker-card draft	60-grain breaker sliver ×105		
Breaker-card waste 10%	.90) 6,300		
	7,000-grain or 16-oz. picker lap.		

* Four doubler laps of 40 ends each.

The Vanishing Pirate

Silk-rayon design thefts nearly eliminated, Registration Bureau reports



***Above:** At rear, design photostat department; foreground shows classifying procedure; the first two steps in design registration. Picture on left: Scene in searching and comparing department of Bureau, with Miss Irene Blunt, director of Bureau and secretary of the Federation standing in the foreground.*

THE Design Registration Bureau of the National Federation of Textiles passed an important milestone last month—the Bureau registered, with due circumstance, its 100,000th design—and the occasion was significant in that it focused attention on the notable work accomplished by this organization during its eight years of existence. The Bureau's record of achievements can best be told by contrasts. In August, 1928, when it was founded as part of the old Silk Association, design piracy was so rampant in the silk-and-rayon fabric industry that many believed the evil never could be eradicated. Today, the most flagrant types of pirating have been practically eliminated, while "near pirating" has dropped 90%.

Other contrasts are equally impressive. In 1928 the Bureau staff comprised a photostat machine operator and a design librarian. Miss Irene Blunt, then assistant secretary of the association, and now secretary of the Federation, has directed and supervised the work of the Bureau since its inception. Today the Bureau staff totals 48 persons. From the six firms who first submitted about 15 designs daily to the Bureau, the clientele has swelled to 350 firms submitting about 100 daily.

This record of growth is especially impressive when it is considered that formation of the Bureau marked the first generally accepted move, in any branch of American industry, to combat design piracy through cooperative effort. Inquiry among silk-rayon manufacturers as to the Bureau's accomplishments to date, indicates that they are agreed on one point—namely, that the organization is becoming increasingly effective and that it has potentials for yet wider service.

The Bureau's procedure for design registration has five divisions: (1) submission of design; (2) recording; (3) searching; (4) decision as to whether registration is warranted; and (5) registration. Miss Blunt defined the Bureau's registration policy as follows: "The Bureau requires simply that a design shall be sufficiently different in appearance from those already registered as to permit reasonable competition."

Evaluation of the Bureau's significance has two phases—the present and the future. It has served to extend the sales life of designs from 10 days to six months, and the protection it affords has materially increased the number of designs on the market. Looking ahead, we find the Bureau facing three major issues: (1) registration of woven designs, as distinct from prints which are now nearly 100% registered; (2) creation of a division which would register designs for designers themselves as supplementing registration for manufacturers and converters; and (3) increasing scope of the Bureau with respect to fabrics made of fibers other than silk or rayon.

Considering the first, the main point is that the manufacturers of jacquard weaves, after a year's test, are now convinced such weaves can be registered, and this may lead eventually to registration of all woven silk-rayon designs. On the second point, some requests for registration are being received from designers, and the Bureau recognizes that eventually demand from this quarter might warrant including designers in its scope.

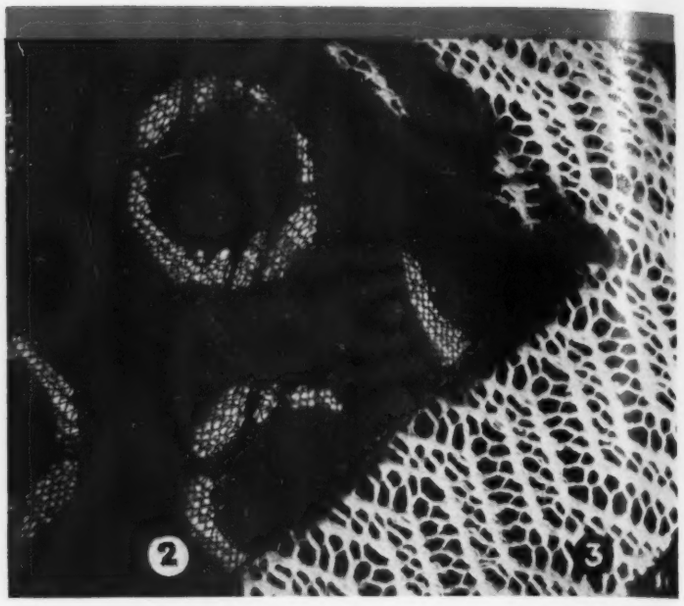
Finally, since appearance is the sole criterion, and the Bureau already accepts designs from cotton printers as well as silk and rayon printers, it is perfectly conceivable that eventually the Bureau might become the instrument for protection of *all* textile designs. Indeed, giving the word "appearance" its broadest possible definition, the thought arises that perhaps some day, even textile finishes might be registered!

Irrespective of such remote conjectures, however, the bureau enters its second 100,000th era of designs holding firmly to its original purpose—namely, elimination of the design pirate in silk-rayon textiles, in which field it has achieved an international reputation.

LACE CAN BE STURDY

and can simulate woven material while retaining its decorative features.

By George Middleton



MANY people think of lace merely as a material used by the cutting-up trade for the purpose of ornamenting women's clothing. The public also is familiar with entire dresses of all-over lace, although in this instance the lace dress is generally worn over an undergarment of contrasting hue, which exhibits the pattern by reason of the difference in color, and the lace itself cannot be called a "fabric." But that is not the whole story.

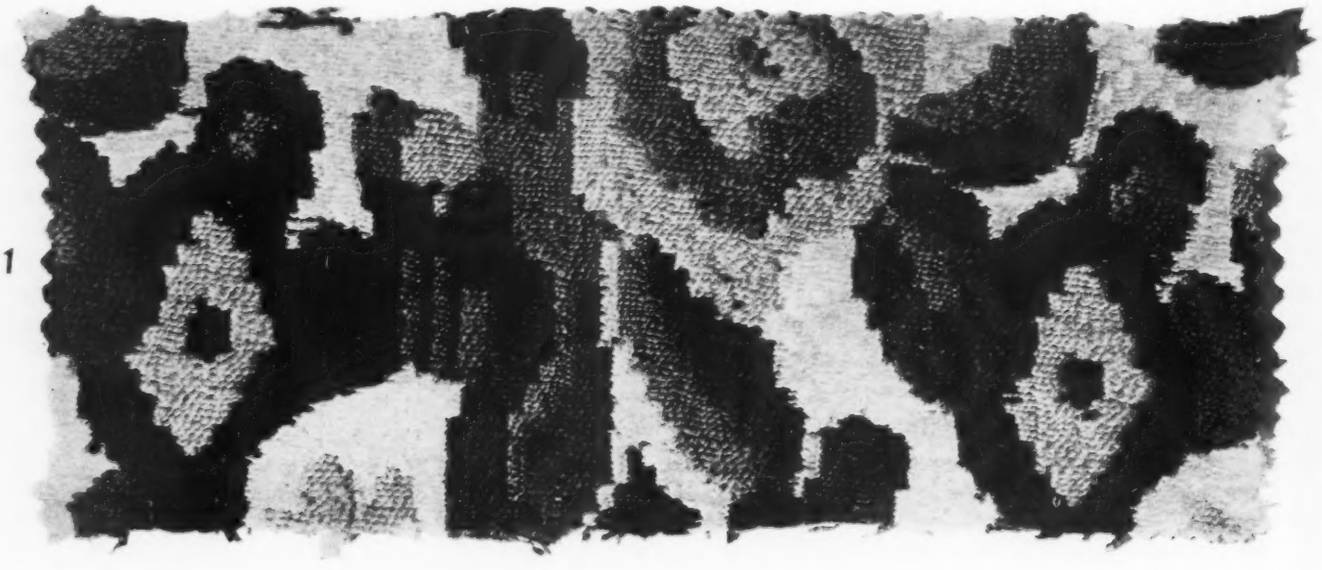
Twelve or fifteen years ago lace manufacturers turned to the production of wool laces, of the appearance and texture of wool tapestries, which were used for making women's sport coats and for covering handbags. No net or openwork was visible which would identify the article with the products of a Levers lace machine; the general appearance was that of a wool fabric, and the only persons who could give information concerning the method of production were lace manufacturers or their employees, particularly the artist and semi-scientist known as the lace draftsman. Variety of pattern was obtained by using wool of different colors, in conjunction with rayon, the whole being made on a base of cotton-warp and brass-bobbin threads. The effect was good, the fabric was attractive and serviceable, and the only fly in the ointment was the price, which was necessarily high for such a quality product. Such a fabric made by a domestic lace manufacturer is shown in Fig. 1. The variety of color and pattern is obtained by using four colors of wool and one of rayon.

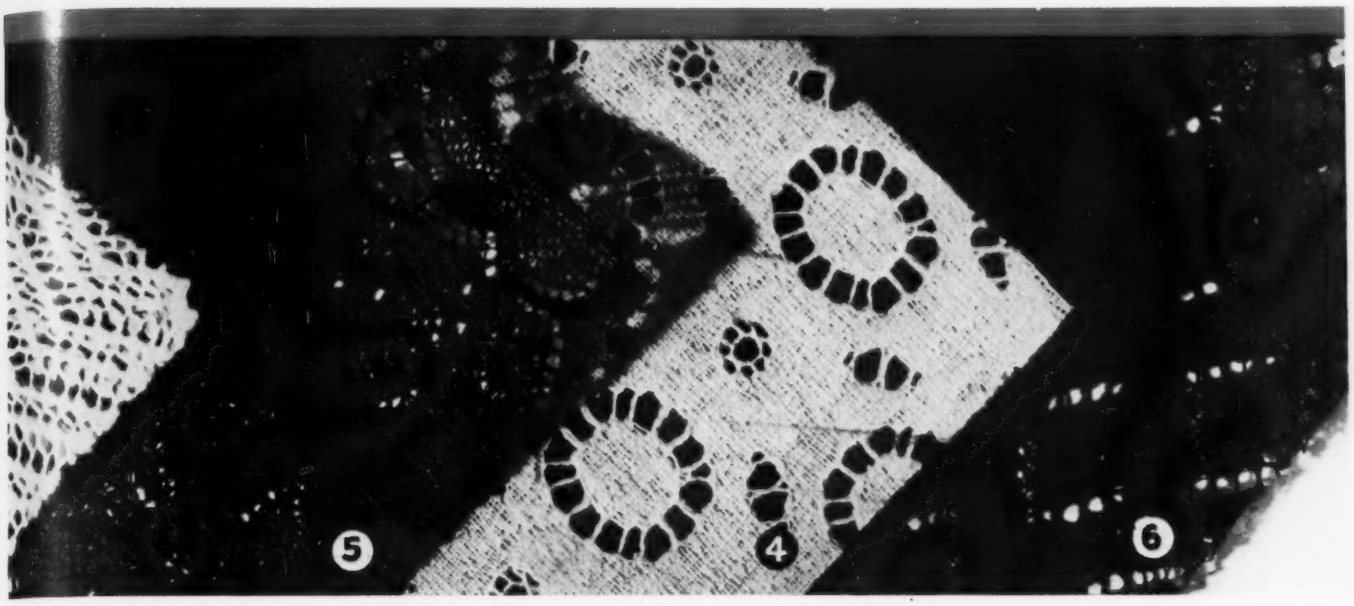
For a time the idea of fabrics made on lace machines subsided, but recently there has been a resurgence of the idea in cotton, and at a price within the reach of every purse. This resurgence is entirely due to the initiative and ingenuity of domestic lace manufacturers.

What Lace Fabric Offers

The fundamental characteristics of a dress fabric may be enumerated as general appearance, wearing quality, comfort, and price. Secondary requirements may be listed as suitable agreement with other articles of attire and the introduction of such decorative features as are desirable, according to the possibilities of the technical method of machine construction utilized.

It is not claimed that these lace fabrics are cheaper than woven or knitted goods, but they appear to be worth a moderate advance in price because of the superior decorative effects which can be offered by this method





of construction; in fact, some of the essential lace features cannot be duplicated by any other method of manufacture. Elaborate patterns, such as are shown on a leno-woven ground, are not made simultaneously with the leno-net, but are subsequently superimposed by the Schiffli embroidery machine.

Data are not available which would give a comparison of the cost of Levers-machine-made fabric and leno-woven, Schiffli-machine-decorated fabric; neither is the question entirely pertinent, as the effects obtained by the lace machine in one process cannot be duplicated by the leno-weaving looms, even with the subsequent addition of embroidery.

There are four basic systems of making lace. However, two of them—one using the *fil passé* style and the other utilizing the Ensor net set-out—are unsuitable, being too costly or not having the wearing qualities of a fabric which has to be substituted for woven material. The two remaining methods—independent beams and bobbin fining—are both utilized; the former is preeminently suitable.

The independent-beam system is capable of making fabric which is similar in appearance and wearing quality —dependent upon the yarn count used—to woven cloth. Add to this the possibility of imitating the decorative features of some other types of fabric, such as the buttonholes of Madeira and Swiss embroideries, and the way appears to be open for a large and profitable extension of the use of Levers lace machines.

Types That Appeal

The first requisite seems to be that the fabric shall more or less resemble woven cloth. That is, a fabric which has the solid appearance and wearing qualities of a woven material, with the decorative attraction of lace, may claim to have the twofold appeal of service and style to a degree that cannot be reproduced by looms. An examination of some of the specimens shown in the illustrations bears this out. The wearing qualities are undoubted; some of the coarser cotton fabrics may be slightly heavy as summer apparel, but not heavy enough to discommode the wearer seriously; and the price is moderate. The material can be purchased as yard-goods by persons desirous of making their own personal attire, but ready-made garments are also bought, and it is fairly safe to state that most of the purchasers have no idea that the dress has been made on a Levers lace machine.

This fact is mentioned neither as an advantage nor as a disadvantage. It indicates, however, that the fabric successfully conceals the identity of a machine which is usually associated in the mind of the public with the production of a material that is not commonly used for the wear and tear of everyday life. Lace, when used in large quantities, is generally coupled with lighter and more agreeable functions at which garments *de luxe* are worn.

The secondary requirement of suitable agreement with other articles of attire must be a matter of individual judgment on the part of the wearer and the "other articles" must be remembered when the dress is made or bought, or else put aside if unsuitable.

Unlimited Decorative Features

Introduction of decorative features as inherent constituents of the finished material, and made simultaneously with the dress fabric, opens a wide vista of possibilities. This is bounded by size of machine set-out and yarn count; but there is no reason why motifs of genuine lace, including meshes of net and such objects as are widely used in independent-beam laces, cannot be introduced at suitable distances from each other in the background of simulated woven cloth.

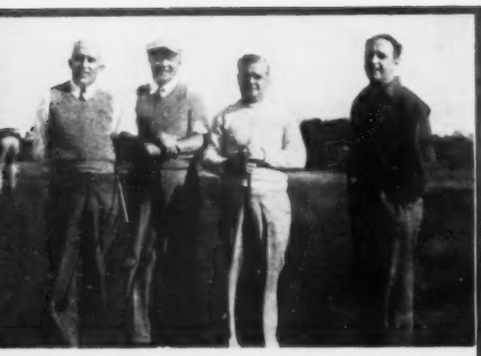
The illustrations of fabrics made on Levers lace machines are all made by the independent-beam system, except the one shown in Fig. 2, which is made on a bobbin-fining set-out. The sample shown in Fig. 3 is an excellent imitation of a knitted fabric, that in Fig. 4 resembles the cloth ornamented with eyelet embroidery as made in Switzerland or Madeira, and the one in Fig. 5 is similar to patterned cloth. There remain, as exemplified in Fig. 6, fabrics which retain more or less of the characteristics of lace, while at the same time showing enough solidity to warrant their use as dress fabrics. A further possibility is the admixture of rayon or metal threads for the purpose of pure ornament on the cloth background. There is no reason why such fabrics, if properly exploited, should not find a permanent place among the products of Levers lace machines.

J. A. Pons, Morganton F. F. Hosiery Co. (winner, low net score); P. H. Thompson, Textiles, Inc.; A. F. Garrou, Pilot F. F. Hosiery Mills.

R. H. Griffith, Duplan Silk Corp.; Henry Bryan, Bryan Hosiery Mills; Earl Constantine, N.A.H.M.; Geo. Thomas, Cosby & Thomas.

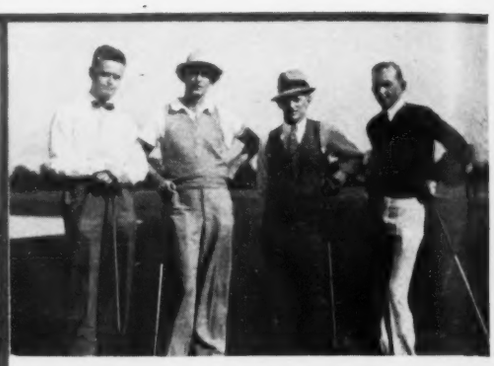
J. K. Voehringer, Jr., Frank Curran, Mock-Judson-Voehringer; F. Lemmond, Dixie Mercerizing Co.; A. E. Margerson, Sr., Carolina Web. Co.

CAROLINA YARN GOLF TOURNEY at PINEHURST



G. Young, Burlington Mills; C. C. Harding, Dixie Throwing Co.; A. B. Borner, Hare & Co.; A. H. Klein, Belding-Heminway-Corticelli.

P. F. Brown, Rayon Division, E. I. duPont de Nemours & Co.; Frank Coker, Rayon Division, E. I. duPont de Nemours & Co.



C. W. Causey, Jr.; Frank Hall, Belmont Hosiery Co.; Ernest Kiesewetter, Bossong Hosiery Mills; G. Graves, Cetwick Silk Mills.

Hans Vaterlaus, Siber-Hegner Co.; A. W. Kops; Mack Saunders, Elmore Corp.

Fred Duncan, Golden Belt Mfg. Co.; Buck Cheatham, Aberfoyle Mfg. Co.; Ed. Dale, Aberfoyle Mfg. Co.; Dwight S. Williams.

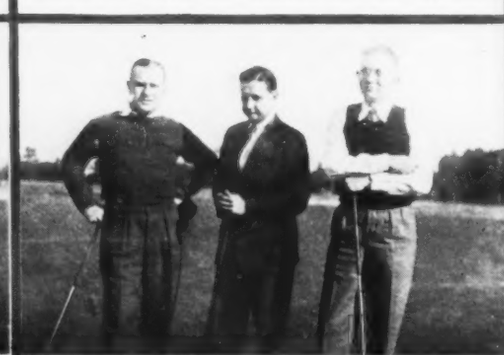
Nathan Ayers, Triangle Hosiery Mills; H. P. Hardin, Triangle Hosiery Mills; M. Foil, Cannon Mills; Dave Long, Amazon Cotton Mills.

Henry Day, Waddill P. & L. Co.; L. C. Parker, Adams-Millis Corp.; R. C. Anderson; J. W. Lindsay, Guilford Hosiery Mills.

R. N. Apprich, Textile Machine Works; Bill Barnhardt; Roy Weaver and E. A. Shoemaker, T.M.W.; E. Pierson, Hudson Silk Hosiery Co.

Arthur Haefela, Hanes Associated Mills; George Porges, Kaumagraph Co.; Howard Cannon and G. Friedlander, Duplan Silk Corp.

L. F. Smith, Tubize Chatillon Corp.; Carl Eiser, Knit Goods Publishing Co.; Ed Steere, Sr., Ed. Steere, Jr., Asheboro Hosiery Mills.



J. D. Maver, Hanes Associated Mills; T. G. McLaughlin, Wilkes Hosiery Mills; Russell Hodges, Wilkes Hosiery Mills.

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by women in conference

IF you think you accomplish a lot in a conference, you ought to attend a women's conference. They are held at any odd moment, over the back fence, over the counter, over the bridge table — anywhere. And in those conferences, many commercial reputations, as well as personal reputations, are made and un-made.

There's no use kidding ourselves; in this business of making hosiery and wearing apparel, we are absolutely dependent on the reputation it has with women. They buy our merchandise, what they think of it is a hundred times more important than what we think of it or what the men in the mill think of it.

That is why Dixie's system of Controlled Manufacture always works from the outside viewpoint. The eternal question is, "What will this yarn do?" The laboratory experiments and performance tests are always aimed to find out what will be the consumer's experience with garments and merchandise made of Dixie durene. We don't forget that the yarn has to run smoothly on machines, but we know that, after it does that, it has to serve satisfactorily in a woman's wardrobe, or in a child's or man's wardrobe bought and judged by a woman.

Control-manufactured Dixie durene is made to help add color, style, wear, elasticity, absorbency and comfort to your merchandise. Those are features that bulk large in women's conferences. When you use Dixie durene it helps your merchandise get the "breaks" on reputation that lead directly to the "breaks" on sales. Let our representative get samples for you.

Dixie **MERCERIZING CO.**

CHATTANOOGA, TENNESSEE

DIXIE DURENE...A PRODUCT OF CONTROLLED MANUFACTURE

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THE OVERSEERS' CORNER

Giving Credit where Due

By a Mill Superintendent

AS I have said before, a superintendent has to keep his eyes on the whole organization so that he knows just what fellows are coming along in good shape and are worth consideration for promotion to second hand or overseer when a vacancy occurs. Naturally the superintendent has to depend to quite an extent on his overseers to keep him posted, since the overseer is right on the ground and in closer touch with the workers.

It is easy to tell quite a lot about the character of an overseer by the manner in which he passes along information about various of his subordinates. Just by way of example, there is the case of an overseer that I let go last spring. In the first place, if one of the second hands or workers had a bright idea, the overseer would grab all the credit for himself and wouldn't think of passing along word to me that Joe Smith or John Jones had thought of something smart and was worth watching. Further, whenever I asked the overseer how such-and-such a man was getting along, he would always make disparaging remarks and try and make out that there wasn't really anyone that amounted to much.

I suppose that the man acted the way he did because he was jealous and afraid that unless he grabbed all the credit there was, and kept everyone else out of sight, that I would be tempted to replace him with one of the bright second hands. That's exactly what I did do, but for a far different reason than the overseer worried about. As a matter of fact, the overseer would still be here if he had been frank enough to come to me and praise his subordinates when praise was deserved.

Workers and second hands aren't blind, and neither am I. Everyone working in the department with the overseer got madder and madder as time went on, because they knew that he wasn't being fair, and the situation became obvious to me also. You can't expect to get cooperation and good work from the people in your department if they know that you are grabbing all the credit to yourself and passing the buck down the line on all trouble. The condition in the department of the overseer I mentioned became so bad that I had to make a change, particularly since he wouldn't heed a warning and change his ways.

Hiring an Overseer

Editor, Overseers' Corner:

What are the requirements necessary to be overseer? Some think the requirement is to be able to strut around a room putting fear into the hearts of those he employs, some think they should physically help their employees to do their work, some think they would have to work through a friend to get a position. Some think you have to be a young man about three years out of college, others think a man should have five or ten years of experience.

If I were to pick out a man for overseer, I would consider the following: education, experience, appearance, manner of approach, sincerity, associates, age, and references.

One cannot get too much education, but schools are not the only means of education. I know one man who was not able to go beyond grammar school, but with his contact with other people and reading he gained an extensive vocabulary and was able to talk intelligently on many subjects. Experience is a good teacher. Although this method is likely to give lots of hard knocks, there are some things that cannot be learned from books, as theory does not always work out in practice.

A man does not have to wear expensive clothes, but he can keep what he wears clean and pressed. His appearance will make an impression on his expectant employer and by all means he should act natural and not exaggerate his ability, because it is a great disappointment to find that you have hired a man who is not what he represented himself to be, and the reaction is sometimes severe.

There is more in one's approach than is generally believed. Your approach can either gather all you desire, or it can kill its desire. Whom would you do more for: A man who ordered you in a military way to do something or a man who in an executive way made you feel that what he wanted was part of your plan?

A man should have a balance of sincerity in his work, yet a small amount of outside interest in people you employ is not harmful, nor is a bit of humor. A carder was once told by his superintendent that his roving was heavy, and he replied "I'll push up the window shades and it will be lighter." The best result is obtained from a variety of associates, since you also get a variety of thought and ideas from which you can pick to broaden your own.

A man is as old as he thinks he is, yet it is a sad state of affairs when an employer thinks only in terms of years. In such cases one must act, think, and appear in such a sphere as to give the impression of a certain age, so that an actual question need not be put.

One is liable to get references from people who will be the most beneficial, and therefore the employer should inquire as to the relationship of the one giving the reference to the one using it. In most cases, the wording of the reference will be such that you can judge the relationship, and in many cases a former employer's written recommendation is no good. If there are any weak points in the man, the recommender, not wanting to offend, either flatters or avoids any bad features in the man. If, however, you can get a private interview with prospective employee's former employer, you will get better results.

To sum up, then, for overseer give me a man with a fair school education (the more the better but not essential); a man with at least two years' experience, or better; a man with a clean appearance and with a pleasing approach; a man who is sincere and whose associations are varied; a man between 30 and 60 years of age whose action, ability to think, and appearance would lead one to believe he was between 30 and 45 years of age; a man who gives you the names of men to approach, not one who hands you a letter of recommendation; a man whom you think would be fair in his judgment and an organizer.

W. B. McKAY.

Denounces Three Shifts

Editor, Overseers' Corner:

I have been anxiously awaiting some discussion on the subject of three shifts in textile mills. It is of great importance today, to my way of thinking.

Some of the mills in this section run three shifts while the work lasts; after that all employees are on the street

CONTRIBUTIONS

Contributions to "The Overseers' Corner" will be paid for without regard to length. We will be glad to use letters discussing the narrative on this page or any other pertinent matter whether of mechanical, managerial or just plain human interest. Those who contribute kinks or practical helps will be paid additional for an appropriate sketch to illustrate their device. It is not necessary to submit finished drawings. If these pages interest you—contribute something to them to interest others. Address Editor, Overseers' Corner, Textile World, 330 West 42d St., New York, N. Y.

until the next accumulation of orders. This system has been in operation ever since the N.R.A. was declared inoperative. Can it be that the mills have to resort to this system in order to meet competition? Certainly the cost of production is lower because of overhead.

In cases where a mill decides to operate three shifts, this means more help and outsiders are employed. This causes the community to be over-taxed for quarters to house the extra help, and commodities and rents are boosted. If, after some time, the mill shuts down flat without warning, who is the gainer, what happens to local taxation, and who is left holding the bag?

I would like to read in the TEXTILE WORLD the opinions of other overseers on the subject.

CONSTANT READER.

Editor's Note: Will the writer of the above communication send in his name and address so that payment can be made.

Cleanliness

Editor, Overseers' Corner:

I was very interested as well as impressed by the item "Is Cleanliness Worth The Cost" and want to say with all the emphasis at my command that it most assuredly is. I am somewhat astounded in this modern age to hear anyone question the value of cleanliness in an industrial plant; it is almost as foolish as to question the value of honesty.

It has been my experience that where you find a mill that is dirty and messy you usually find slipshod methods and workers of the don't-give-a-darn type who are always ready to stir up trouble or to transfer to some other plant on the slightest provocation. On the other hand, in the clean, well-kept plant, you will find a group of loyal employees who take a pride in their surroundings and in turning out a high quality product.

C. W. R.

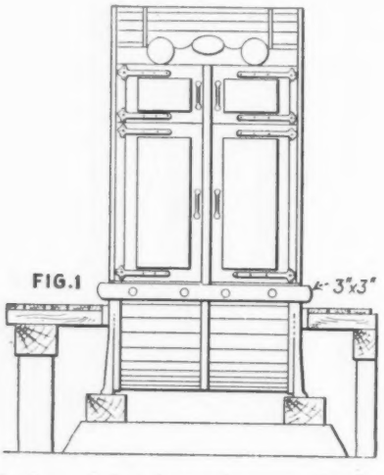
Practical Helps for Overseers

A Fulling Tip

Another cause for damages by fulling mills, at any speed, is the catching of the goods on the lower corners of the mill doors when loading up from the floor. This can be eliminated by fastening a 3x3-in. piece of white pine, maple, or cypress across the front of the mill, extending 1½ in. beyond each side and directly under the doors, as shown in the illustration. The outside edges and both ends should be rounded. With this arrangement, the goods cannot be caught and ripped while loading or when running in again after measuring.

The scrapers or brass plates fastened to the bottom of the traps are the pet bugaboo of the finisher, and the origin of many an epidemic of pinch holes. We hear many arguments as to the correct position of these scrapers. It has been the writer's experience that if enough space is left between the scraper and the roll to allow one leg of a standard 2-ft. rule to be passed back and forth easily, also on the sides when the mill is equipped with bronze flanges, there is just enough space for the cloth to slip down and out again before any damage happens. However, with the rapidly increasing use of Bakelite scrapers and cheeks, the finisher's fears of pinch holes in the trap are fast disappearing.

DAVID WELSH.



A piece of 3x3 fastened across the front of the mill prevents the goods from being caught or ripped while loading.

Wrong Picks

It has been my experience that many mistakes are made in the weave room that are unknown unless someone else notices them after the cloth is woven. They may be caught in the cloth room, or may be sent back by the customer.

One of the most common mistakes is wrong picks, and in my humble opinion there is no reason at all for making this mistake. Of course there may be a slight variation of one or two picks, but weaving cloth four, six, or eight picks out of the way is out of reason.

It is my contention that the loomfixer should change his gears in accordance with instructions for that particular style; however, I do not believe that he should be trusted altogether, for loomfixers have been known to put on the wrong gears. Not only that, but there may be something else wrong which will, even with the correct change gear, give the wrong pick. It is necessary, therefore, for the second hand to check the picks on each loom after a new warp has been put in, before more than one or two yards are woven. Working this way, there is no reason why any cloth should be woven with incorrect picks.

Of course it can be argued that the second hand has too much work and no time, or that he is incapable of properly counting picks. Yet it only takes a few seconds to count the picks, and if a man is not intelligent enough to be able to do this simple thing he surely is not intelligent enough to assume the responsibilities of a second hand's position.

P. S.

Rayon-Staple Organization

In the October issue of *The Traveler*, the live little periodical of the Victor Ring Traveler Co., Providence, appears the following interesting table:

Layout for Rayon Staple
1½-denier, 1½-inch

Breaker Picker
2-40" porcupine beaters.....480 r.p.m.
Lap weight.....14 oz. per yard
Relative humidity.....60-65%
Cleaning bars on pickers covered over. Grid bars uncovered.

Finisher Picker
1-18" Kirschner beater.....650 r.p.m.
Lap weight.....12 oz. per yard

Card
R.p.m. doffer 6.5
R.p.m. lickerin 320
Card sliver.....40 grains per yard
Production.....240 lb. per 40 hr.
Relative humidity 60%
Top-flat speed on cards,
1¼ per min. past a given point
Feed plate on cards set as close as possible—
.010" on long-nosed plate
.015" on short-nosed plate
Mote knives set.....022" from lickerin
Mote knives set.....029" from lickerin
Percentage plate on cards set as close as possible; or in other words, set close enough to get a strip all the way across the plate.

First Drawing
R.p.m. front roll..... 300
Sliver.....53 grains per yard

Second Drawing
R.p.m. front roll..... 300
Sliver.....60 grains per yard

Slubber
Draft.....60-hank from 60-grain sliver
R.p.m. spindle 550
Twist per inch.....55

Intermediate
Draft.....1.50-hank from .60-hank dble.
R.p.m. spindle.....625
Twist per inch.....926
Relative humidity.....50%-55%
(This is for 9 x 4½" frame)

Fine frame
Draft .....3.00-hank from 1.50-hank dble.
R.p.m. spindle..... 750
Twist per inch..... 1.50
(This is for 7 x 3½" frame)

Jack frame
Draft.....7.00-hank from 3.00-hank dble.
R.p.m. spindle.....1025
Twist per inch.....2.07
(This is for 6 x 3" frame)

Questions and Answers

Throwing Costs

Technical Editor:

In the article "Large-Package Throwing," which appeared in the August issue of TEXTILE WORLD, the following statement is made: "Using the 'half-pound system,' it is entirely possible to throw 150-denier crepe (with 50 turns) for a mill cost of 10¢ per lb." This figure is entirely out of line with my total costs for throwing 150-denier yarn and is so low that I am sure it cannot include overhead. Will you kindly advise me just what items are included and how the figure was derived. (8417)

We have referred this inquiry to the author of the article and have received the following reply:

"The figure of 10c. per lb. does not include maintenance, power, water, light, depreciation, taxes, insurance, office expense, administration, and other overhead over which the throwster has no control. It does include all direct and indirect labor for throwing, including soaking and packing; soaking materials; and departmental supervision. That is, everything under the direct control of the throwster, even to wages of cleaning crews and bobbin boys, is included.

"The figure of 10c. per lb. (which, of

course, is a round figure) is based on actual mill operation, with spindles operating 120 hr. weekly, and a wage rate of $13 to $15 for a 40-hr. week.

"If overhead were added, the total cost would probably be about 100% higher, the exact percentage depending on the size of the plant and its set-up. The article in question, however, was not intended to indicate total costs; but was written from the viewpoint of the throwster and aimed to show him the point to which he can reduce those expenses of his department that are directly under his control."

Carpet Beetle in Hosiery

Technical Editor:

We are inclosing a stocking on which you will find a worm which is eating the silk. Kindly inspect this stocking and advise us what type of worm this is and the best method of extermination. (8372)

We have referred this inquiry to the U. S. Department of Agriculture, Bureau of Entomology and Plant Quarantine. This Bureau reports that the insect is a small specimen of the carpet beetle or buffalo moth, belonging to the genus *Anthrenus*.

We advise you to take immediate action to eradicate this pest. All bins, shelves, walls, floors, and other possible hiding places for harboring the insect should be thoroughly investigated. There are a number of effective remedies for destruction of the larvae and the beetle which will do effective work when properly applied. Farmers' Bulletin 1346 gives detailed information on this subject. Copies can be secured by sending to the Superintendent of Documents, Government Printing Office, Washington, D. C., inclosing 5c. for each copy desired.

Red Stains on Manipulated Fabric

Technical Editor:

We are sending you a sample of blue piece-dyed manipulated cloth representing some red stains with which we are having trouble. This trouble has been coming up for about three weeks. We had previously believed that the trouble was in the finishing room after the cloth had been extracted. Thought possibly a water leak in the cloth dryer was causing the trouble. However, this has been remedied, but the trouble has continued. Today we decided to inspect some of the cloth as it was taken from the extractor after being piece dyed and we found some of the stains there. We shall appreciate your advising us as to the cause of this trouble. (8344)

Following the usual course of procedure, we have attempted to duplicate the discoloration of the fibers, both wool and cotton, by the application of various materials used in finishing plants. Spotting with acids, alkalis, and copper salts failed to cause a red discoloration. Hydrosulphites cause a bright, reddish blue discoloration. The nearest effect to that of the sample submitted was obtained with hypochlorite bleaching solution; if this is dilute, it turns both the wool and the cotton, fibers reddish; if the solution is stronger, the stains become yellowish, whereas on the fabric only the wool fibers are red, where the streaks occur.

Without knowing all the details of your scouring and dyeing processes, we are unable to give an opinion as to the way in which the goods were discolored. We suggest, however, that you follow up the matter along the lines indicated above. That is, check all the various departments through which the goods pass to determine what chemicals are used. Then apply each of these materials to a sample of the fabric. When you find one which duplicates the stain with which you are having trouble, you will have a good clue as to the cause of the discoloration.

Average Twist Multiplier

Technical Editor:

I would like to know what is the best way to get an average twist multiplier. For example, I am spinning—

30/1 3.00 x square root
40/1 4.00 x square root
50/1 4.50 x square root
60/1 4.75 x square root
70/1 5.00 x square root

What will be average twist multiplier? The following is the method I use. Is it the best?

Yarn No.	*Pounds*		*Twist Multiplier*		*Gross Twist*
30/1	1,000	x	3.00	=	3,000
40/1	2,000	x	4.00	=	8,000
50/1	1,500	x	4.50	=	6,750
60/1	3,000	x	4.75	=	14,250
70/1	2,000	x	5.00	=	10,000
					42,000

42,000 ÷ 9,500 = 4.42 average twist multiplier. (8388)

We assume that you are endeavoring to fix an average twist multiplier so that you can reduce your production, from week to week, to a standard or hypothetical yarn of a certain basic number with a standard twist multiplier and thus obtain strictly comparable cost figures.

Using the method you outline, you are attempting to obtain a figure for the twist multiplier which will be modified by the total poundage of each number produced. The answer which you obtain is not the answer you are seeking. Rather, it is the average twist multiplier per pound of yarn produced.

The twist multiplier is dependent on two variable factors; viz., the actual yarn number and the actual turns per inch of twist. It is evident, therefore, that the true average twist multiplier must be determined from the true average yarn number and the true average twist per inch. To illustrate this clearly, we shall use the same figures you used.

To obtain the true yarn number, we proceed as follows:

Yarn No.	x	*Pounds*	=	*Hanks*
30		1,000		30,000
40		2,000		80,000
50		1,500		75,000
60		3,000		180,000
70		2,000		140,000
		9,500		505,000

$\frac{505,000}{9,500}$ = 53.16 average count produced

The next step in the calculation is to determine the true average twist per inch, illustrated by the following example:

Hanks	*In. per Hank*	*Total In.* (thousands)		*Turns per In.*	*Total Turns* (thousands)
30,000	x 30,240 =	907,200	x 16.42 =		14,900,000
80,000	x 30,240 =	2,418,400	x 25.30 =		61,150,000
75,000	x 30,240 =	2,268,000	x 31.80 =		72,200,000
180,000	x 30,240 =	5,443,200	x 36.80 =		200,300,000
140,000	x 30,240 =	4,233,600	x 41.80 =		177,000,000
		15,270,400			525,550,000

$\frac{525,550,000,000}{15,270,400,000}$ = 34.42 average turns per inch

Then—

$\frac{34.42}{53.16}$ = 4.72 average twist multiplier

In the above calculations, the inches per hank is the product of 840, the yards per hank, and 36, the inches per yard; the turns per inch is calculated from the multipliers and the yarn numbers as submitted. The final figure obtained as a result of these calculations—4.72, the average twist multiplier—is the true average, since it is obtained as a result of using true averages as a basis of the calculations.

The conclusion that this is the correct figure is confirmed by an inspection of the data given, which shows that there are more fine yarns with higher twist multipliers than comparatively medium numbers with lower twist multipliers. The total yardage of the finer counts is, therefore, greater than the total yardage of the medium counts, which must of necessity affect the final figure by raising it from that obtained by calculating the "average twist multiplier per pound."

Just what value this final figure would be, other than to be used as a means of obtaining a hypothetical yarn as a basis of cost, is not apparent; but at any rate, we are entirely confident that the method submitted is correct and will give a final figure which reflects the true conditions with accuracy.

Vat-Dyed Fabrics Are Streaky

Technical Editor:

I am inclosing herewith two samples of dyed cotton fabric. You will note that these samples are streaky and uneven in appearance. Our finishing works is having considerable trouble with these goods and tries to pass the buck back to our gray-goods mill. Will you kindly give me your opinion as to whether the trouble is in the gray goods or the dyeing and what steps should be taken to prevent a recurrence of the trouble. (8345)

The streak in the green sample is obviously a weaving imperfection, while the streaked appearance of the brown is, in our opinion, a combination of weaving effect and uneven dyeing. The possible causes of streaked dyeing are so numerous that it is difficult to say which causes this effect. If, as we suspect, this is a mercerized fabric, creases during mercerizing or uneven washing after mercerizing might produce the effect. Creases on drying sometimes produce similar results. Creases or uneven jig rolls might be responsible. Dyes with rapid exhaustion rates sometimes cause this effect. With the exception of uneven mercerizing, any of the above faults might be helped by dyeing at lower temperatures with a small amount of soap, sulphonated oil, or other retarding agent in the dyebath. It would be better, of course, to correct any mechanical faults at their origin, rather than to attempt to even them in the dyebath.

Weights and Widths of Woolens

Technical Editor:

We have had some complaints from customers because of delivering cloth narrower than the purchased 56-in. width.

Realizing that every extra end added to the fabric costs additional money, we have tried to lay the cloth in the loom just as narrow as will allow the width to finish full 56-in. between tenter holes. We find that the width between tenter holes varies from end to end after the cloth is

dried. We are using automatic guides on our dryer and feel that our width should be controlled as positively as is possible on any dryer.

Some of our customers advise that their deliveries from other mills run from one-half to a full inch wider between selvages than the width which was purchased.

Will you advise us whether in your opinion this is true? In other words, do most mills in order to guarantee a margin of safety against narrow cloth, purposely manufacture the cloth one-half to a full inch wider in order to protect them against possible variation in width through finishing room processes? (8354)

It is the general practice in both the men's- and women's-wear market, in quoting finished weights and widths, to allow a margin of 1 oz. and 1 in. variation; for example, "17/18 oz. and 56/57 in. wide," or "13/14 oz. and 54/55 in. wide." To quote in round figures is, to say the least, most unusual and is tantamount to asking the manufacturer to perform miracles. Therefore the latter is perfectly within his rights in demanding specifications allowing an ounce and an inch variation in finished fabric.

Providing due allowance is made during the fulling process, no difficulty should be experienced in either the finished weight or width, if the fabric is quoted with these usual tolerances. Variation in width between tenter holes after drying suggests a mechanical defect in the tentering machine. It may be that the automatic guides are improperly adjusted and do not function so accurately as they should. Again, the top layer and the bottom layer of most tenters are 1 in. narrower in width than the intermediate layers, so that if for any reason the machine is stopped before the full piece has been entered, a variation of 1 in. in width between the top layer and succeeding layers will probably result. It would be advisable, therefore, to check up on your machine for any irregularities in the mechanical parts.

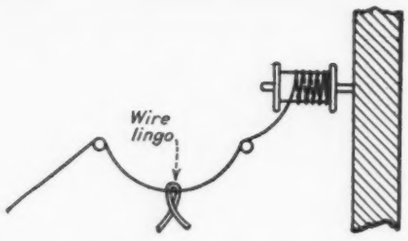
Raschel Fabric Curls

Technical Editor:

The inclosed fabric is made on a raschel knitting machine, 12 needles to the inch, and is composed of 2/40s yarn. I am having difficulty with the fabric, in that it does not come off the machine straight. You will note the curves in the fabric. The take-up is properly adjusted, but the cloth seems to be curved before it gets to the take-up. If you will enlighten me, I shall greatly appreciate it. (8363)

This sample was evidently produced on a single-needle-bar, latch-needle, raschel machine, using one guide bar. In the sample two extra threads have been used at each selvage to reinforce the edges, and these extra threads are the cause of the bowed condition of the fabric in each band or stripe. They cause the selvage threads to knit tighter than the body of the fabric and thus prevent the take-up from operating in an even manner.

There was evidently only one warp beam in the machine carrying all of the threads. We suggest leaving off the main warp beam four threads in each selvage and replacing these ends with threads from spools carried on a spool board running across the top front of the machine. Easy-running spools should be used, with wire lingoes supplying tension to the threads, as shown in the diagram. It would be even better to have a wire running across the machine, controlled by a



pliable spring at each end and over which all the selvage threads could be placed.

This particular kind of single-needle-bar, single-guide-bar fabric is not easy to control at the selvages; but with care in the tension control of the four independent selvage threads, we are of the opinion the fabric and take-up may be induced to operate in an even manner.

Why 13/15-Denier?

Technical Editor:

We shall appreciate fullest information regarding the apparently universal preference of silk-hosiery mills for 13/15-denier silk—in spite of its much higher cost—to 20/22-denier.

In order that you may more fully understand our question, we will head our queries as under:

TRAM: Our hosiery ranges from 4-tram 56-denier to 10-tram 140-denier. Would it be possible satisfactorily to replace 7-, 9-, and 10-tram 13/15-denier with 5-, 6-, and 7-tram 20/22-denier silk?

TWIST: Our twists per inch range from 5 up to grenadine. Would the 20/22-denier be suitable for twists up to say 20?

EVENNESS: As regards evenness, we fully realize that we would have to buy a 20/22-denier silk having a very high evenness rating to counteract the loss of the averaging ability of the larger number of 13/15-denier threads.

PLIABILITY AND LUBRICITY: Judging from a few bench tests on soaked 20/22-denier silk, the lubricity was higher than for 13/15-denier, and the pliability although lower, did not alarm us with the possibility of kinking. What is your experience in this direction?

MARKET SUPPLY AND SEASONAL CHANGES: Is there a more limited supply of 20/22-denier, and are its seasonal changes any different from 13/15-denier silk?

We do our own silk processing prior to knitting. (8347)

The universal preference of silk hosiery manufacturers for 13/15-denier raw silk is due primarily to three factors: (1) a greater and more economical adaptability of this denier to standard hosiery styles, (2) a greater variety of stock and grades, and (3) greater evening-up with 13/15- than with 20/22-denier raw.

TRAM: The yarn sizes with various threads of 13/15 and 20/22 are:

13/15-denier	*20/22-denier*
4-thd. x 14-den.= 56-den.	3-thd. x 21-den.= 63-den.
5-thd. x 14-den.= 70-den.	4-thd. x 21-den.= 84-den.
6-thd. x 14-den.= 84-den.	5-thd. x 21-den.= 105-den.
7-thd. x 14-den.= 98-den.	6-thd. x 21-den.= 126-den.
8-thd. x 14-den.= 112-den.	7-thd. x 21-den.= 147-den.
9-thd. x 14-den.= 126-den.	
10-thd. x 14-den.= 140-den	

This table indicates but two sizes; viz., 84- and 126-denier yarn—on which there is an even match. On other sizes it is a case of either using a finer or coarser yarn and, in the case of the fine, producing more stockings or, in the case of the coarse, producing less stockings.

EVENNESS: The evening-up factor of a 13/15-denier is about 2% greater than in the case of a 20/22. Therefore, to get the equivalent in evenness of a 20/22, raw silk 2% higher in evenness must be used.

TWIST: The amount of twist that can be given a thread without twisting up into a kink is dependent on the process and tension in throwing, pliability of the thread, and relative humidity of the spinning room.

PLIABILITY AND LUBRICITY: Pliability is dependent on five factors: (1) nature of silk, (2) soaking, (3) air condition in spinning, (4) wetability of yarn, and (5) twist.

A very hard-nature silk, soaked mildly, given a high twist in a hot and dry room will kink badly on either a 13/15 or 20/22, whereas the same silk soaked properly and twisted in a temperature of from 75 to 80° F. at a relative humidity of from 65 to 70% will knit satisfactorily if properly dampened in knitting. A 20/22, however, generally requires a stronger treatment than a 13/15 of the same nature. As to the lubricity, that is altogether a problem of proper treatment in soaking. Processing of the yarn is unnecessary if it is properly handled in throwing.

MARKET SUPPLY AND SEASONAL CHANGES: The supply of 20/22 is limited, as reelers consider it a special size and reel mostly on contract or a limited stock beyond that.

Personal News

Merton Waterhouse has been made overseer of dyeing at Robinson Mfg. Co., Oxford, Me., succeeding **W. E. Rowlandson.**

Carl Duncan, for seventen years associated with Hickory (N. C.) Hosiery Mills, is now in charge of the finishing and shipping department of Whisnant Hosiery Mills, Hickory, N. C.

A. N. Bell has been promoted from second hand of spinning at Eagle & Phenix Mill, Columbus, Ga., to overseer of carding and spinning at the Girard plant.

William Gaston, formerly with Du Pont Co., Amphill, Va., where he was associated with the control department, has accepted the position of chemist with Aberfoyle Mfg. Co., Southern Division, Belmont, N. C.

H. O. Corkum, formerly with Amoskeag Mfg. Co., Manchester, N. H., has been named assistant agent at Wauregan-Quinebaug Mills, Wauregan, Conn.

S. M. Newsom, Clemson College textile graduate of 1934, has accepted a position in the testing department of Borden Mills, Inc., Kingsport, Tenn. He was formerly with Goodyear-Clearwater Mills, Rockmart, Ga.

W. H. Wall, formerly with Valway Rug Plant of Callaway Mills, LaGrange, Ga., is now overseer of weav-

ing at Bradley Mfg. Co., Columbus, Ga.

H. L. Dearman has become overseer of the carding and spinning divisions of Sanford (N. C.) Cotton Mills. He was formerly assistant superintendent of Roseboro (N. C.) Mfg. Co.

D. P. Isenhour has resigned his position with Setz-Right Hosiery Mills, Inc., Hickory, N. C., to accept the position of superintendent of the dyeing department of Whisnant Hosiery Mills, Hickory.

H. L. Pruitt, formerly overseer of weaving at Pelzer (S. C.) Mfg. Co., has resigned to become affiliated with Riverside & Dan River Cotton Mills, Inc., Danville, Va.

William A. Cogswell, formerly with the National & Providence (R. I.) Mills of the American Woolen Co., has been named overseer of finished goods at the Dover (N. H.) plant.

Herbert Newman has been named assistant superintendent of Lockwood Mills, Waterville, Me.

R. A. Littlejohn, formerly overseer of weaving at the Greer, S. C., plant of Victor-Monaghan Co., has accepted a similar position at a mill at Opelika, Ala.

James Wilson, who has been overseer of dyeing at Weybosset Mills of American Woolen Co., Providence, R. I., for the last 27 years, was given a testimonial dinner by his friends recently.

W. F. Hutcherson, formerly with Palmetto, Ga., Cotton Mills, is now overseer of carding at Samoset Mills, Talladega, Ala.

E. F. Stevens is now overseer of the cloth room of Mathews Cotton Mills, Greenwood, S. C.

Philip Rosch, formerly superintendent of Cocheco Mills, East Rochester, N. H., has been named night superintendent of Somersville (Conn.) Mfg. Co.

Joseph W. Russell has been appointed chief chemist at Nashua (N. H.) Mfg. Co.

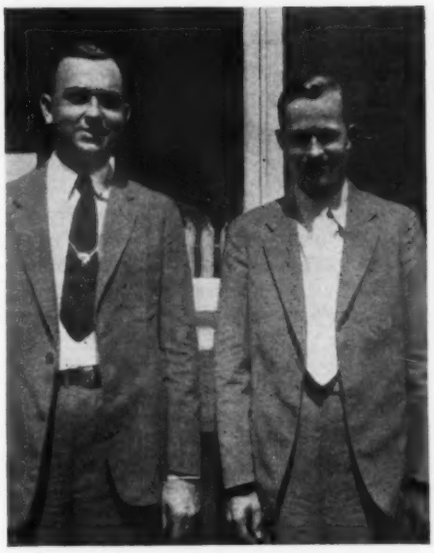
W. A. Jordan, formerly overseer of the cloth room at Darlington (S. C.) Mfg. Co., has accepted a similar position with Mansfield Mills, Lumberton, N. C.

W. W. Hinson, overseer of carding for the last several years at Rhodhiss (N. C.) Mills Co., has also been put in charge of spinning.

L. L. Ashe, formerly of Balfour (N. C.) Mills, has accepted the position of section man in the weaving department of the Gavle plant of Springs Cotton Mills, Chester, S. C.

W. H. Spencer has resigned his position with Springs Cotton Mills, Lancaster, S. C., to accept a position with Watts Mills, Laurens, S. C.

G. G. Simmons, formerly superintendent of National Weaving Co., Lowell, N. C., has accepted the position of assistant superintendent of Drayton Mills, Spartanburg, S. C.



W. A. Powell and R. W. Lawson, of the supervisory staff of Chicopee Mfg. Co. of Ga., caught by TEXTILE WORLD'S *cameraman while attending a technical meeting not long ago in Atlanta, Ga.*

Ralph Davis, formerly of LaGrange, Ga., is now night overseer of weaving at Opelika (Ala.) Mfg. Co.

A. Patton, formerly with Seymour (Ind.) Mills, Seymour, is now overseer of dyeing at Yale (Mich.) Woolen Mills, succeeding **Charles M. Howard.**

C. L. Zimmerman, who took special work in textile chemistry at Clemson Textile School in 1935, is engaged in laboratory work with Renfrew Bleachery, Travelers Rest, S. C.

C. W. Carruthers, who has been head loom fixer at the Arcade Cotton Mill, Rock Hill, S. C., has been promoted to second hand in weaving.

Charles Clark has been named overseer of dyeing at Musgrove Knitting Co., Pittsfield, Mass.

Z. G. Holtzclaw has become overseer of carding at Crescent Spinning Co., Belmont, N. C. He formerly held a similar position at the Gastonia, N. C., plant of Myrtle Mills.

W. E. Herrick has been made overseer of finishing at Swift River Woolen Company, Stafford, Conn.

F. G. Hall, formerly of Fayette, Ala., has become overseer of weaving at Werthan Bag Mills, Nashville, Tenn.

James Oates, formerly of Lupton City, Tenn., is now overseer of carding and spinning at Sunset plant of California Mills Co., Selma, Ala.

Clarence N. Cone, assistant superintendent of Asheville (N.C.) Cotton Mills, has been transferred to Greensboro, N. C., in order to become assistant to **Hill Hunter,** general manager of Proximity Mfg. Co.

Frank Herring, formerly with Samoset Cotton Mills, Talladega, Ala., is now assistant to the superintendent in night weaving at Peerless Cotton Mills, Thomaston, Ga.

Picker Sticks

How the loomfixers can reduce number consumed by woolen and worsted mills

By Benjamin F. Hayes

PICKER sticks, like pickers, are a constantly present item in weaveroom supply costs. For many active years in loomfixing I always insisted on unbored sticks, for I would much rather bore the hole in the bottom of the sticks myself. This was, and I believe still is, the only way we can get sticks bored correctly.

In the accompanying drawing of a picker stick, you will note that I have represented the grain of the wood in relation to the cut of the stick. Sometimes it is difficult to note the direction of the grain; but, with care, we can find it. About 70% of all picker sticks break because the grain is opposite to the direction shown in the drawing. Some 90% of the wear of picker sticks comes in between point 2 and 3; and if the grain is reverse to the direction shown in the drawing, the stick will split after wearing about 1/16 in. and it will wear more quickly.

If we wear the stick in both directions—viz. from 3 to 2 as well as as from 2 to 3—it will not split so easily. Now note that when the picker stick starts to move the shuttle, the connection between picker and picker stick is at point 2. When the stick has made one-half its movement, this connecting point is at 3. If our sweep is too short, pressure of the stick against the picker is relieved, and we then have no pressure as the stick moves its connecting point to 2. Consequently all our energy is being applied as the stick moves from point 2 to 3. We should have sufficient length of sweep to work the picker stick in both directions. We must not, however, carry this to extremes and make the sweep too long.

Two Drops of Oil

If I had only two drops oil with which to oil the loom and wanted to get the most possible benefit out of them, I would place the picker sticks against the pickers and use each drop to oil both picker and picker stick at point 2. Yet there are many weavers who have been weaving twenty years or more and have never used any oil at this point—except by accident. I

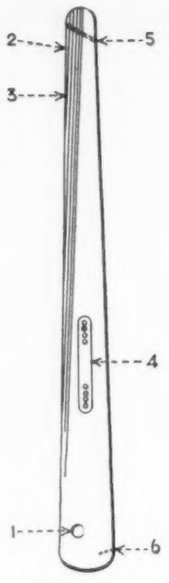
find it more difficult to instruct such weavers in this matter than to instruct those of only a few years' experience.

Now note screw hole 5, which you will see is not at right angles to the center line of the stick. Practically all loomfixers bore this straight across; and in such cases, if we make the hole only a very little larger than it ought to be, the screw will come out. If, however, the hole is bored diagonally, as shown in the diagram, the screw will never come out and will never split the stick. Many times fixers who are troubled with screws coming out will make the hole too small and the stick will then be split when the screw is forced in.

If hole No. 1 is in the center of the stick, the stick will split from the bottom up, especially the long-grain type, which is the best. The only advantage we get by boring in the center is the possibility of using either side for face. I do not believe it is possible to purchase picker sticks that are bored in accordance with the direction of the grain; yet I do know that if sticks are so bored out of center, the picker stick costs will be reduced as much as 75% in many instances. I also know that, just as soon as the trade demands picker sticks that are bored in accordance with the grain, such sticks will be available and not before.

Picker sticks should have ample protection. Every loomfixer knows this, but very many fail to give the correct protection to these important parts of the loom. At one large mill the overseer of weaving asked me what could be done to reduce the cost of pickers and picker sticks. I told him that almost one-half of the picking balls that are now on the looms could be taken off and that this would reduce the cost of these supplies. He was surprised at my suggestion, but he instructed me to take two picking balls from any one of the looms and let him see the loom in operation. I followed instructions, and he soon agreed that the loom was running O.K. and apparently more gently than formerly. He gave instructions to all loomfixers in the mill that, where it was possible to operate a loom with two picking balls, two must be used, and not four as formerly. This was found to afford a saving in loom supplies and also to be a smash preventer, as the looms were equipped with brakes.

When using reversible pickers, we can protect the picker sticks only by using suitable packing on the picker spindle. I have found that a combination of heading cloth with leather is good. I have also used worn-out auto shoes. These serve the purpose and can be purchased at low cost. They are difficult to cut to size, but the fixer usually has a sharp knife which will do the trick. No matter what we use to protect the picker stick, we must always keep a good supply of it on hand, and we must use up the supply as fast as the looms demand. The loomfixer must be constantly on the lookout to see that the picker sticks have the right protection, and must not depend entirely on the weaver to inform him that the bunters are gone. The fixer who does not do this will waste much of his time placing new sticks on the looms.



Picker stick

Power Straps

Many mills still use the old loop power straps—one strap to hold the sweep strap down and another to hold it up. Many times I have seen holes in the stick made as at 4 in the drawing, with four holes above the sweep strap and four below. In many of these holes I have noticed parts of broken screws. I do not know why any mill still clings to this wasteful method, when there are so many adjustable power straps on the market which do away with screws and holes in the stick. These old-time loop straps give continually changing power; whereas the adjustable power straps, which cost very little in the first place, will last for years and will give the same power all the time.

When I was fixing at the best loomfixing job I ever held, I used reversible pickers and always had four picker sticks with the tops soaking in oil. I dated every stick I used, and I did not have one single screw in any of them. I had an iron peg in the bottom of each stick (No. 6 in the diagram), and I could replace a broken stick in 2 min. Furthermore, I was always sure the power would be O.K., for I used the right power straps.

When using the drop-box picker, we should watch the protection at two places: first, the packing on the picker spindle; and, second, the underneath bunter. The latter is often neglected, causing the picker sticks to break. Neglect of this bunter means more work for the fixer, more loss of time for the weaver, and a larger cost for weave-room supplies. I do not have to instruct any loomfixer about this important bunter, for he already knows about it; but he too often neglects it until the stick is broken and in many instances even then will not replace it.

Such a loomfixer is usually one of those who work steadily but never have time to do anything right. The fixer who is constantly ahead in his work and has at all times a few of these bunters made up and ready to be applied is the one who breaks few sticks. He always has plenty of time to do everything right and in general has the good will of the weavers and a comfortable and pleasant job.

When a picker stick breaks in the center, it is because the picker has been caught in the movement of the shuttle box. It could not travel its regular course; and, if the stick could not have broken at this time, something much more important would have broken. However, we can prevent sticks from breaking in this manner by making the connection of sweep strap to sweep stick such that it will slip at any time the picker traps the picker stick. We simply have a slot in the sweep stick in place of the hole for bolting the sweep strap to the sweep stick.

Raw Cotton

And its relation to spinning problems considered at Gaston County meeting

RAW cotton and its relation to spinning problems were discussed at the regular fall meeting of the Gaston County Division of the Southern Textile Association held Nov. 20 at the A. M. Smyre Mfg. Co., Gastonia, N. C. Marshall Dilling, secretary and superintendent of A. M. Smyre Mfg. Co., chairman of the division, presided. W. A. Julian, Gastonia cotton broker, introduced Paul Ceresole, of Jones, Gardner & Beal, Inc., Providence, R. I., who described cotton raising in Egypt, and answered many questions relative to all kinds of long-staple raw cotton as used in Gaston mills. A con-

densation of Mr. Ceresole's remarks (along with the contributions of Mr. Julian and the members) follows:

Raw Cotton Round Table

Egyptian cotton has been in industrial production 50 or 60 years. Average production per acre is about 750 lb., although specialties vary from 300 to 900 lb. per acre. Soil and moisture conditions in Egypt are very different from those in the United States and greatly affect the character of the cotton. Better care is taken of the cotton from the time it is picked until ready to go into the mill. It is not left lying on the ground for weeks at a time as is often the case with American cotton.

Cotton in Egypt is ginned with roller gins, which are asserted to be easier on the fiber than the ordinary American gin. Egyptian ginning companies are large organizations, with not less than 50 stands and hence they tend to produce more uniform cotton.

It is the custom to tear open each bale before shipping, as the Egyptian thinks it smart to cheat the white man. Instead of replacing this cotton in the same bale, it is mixed with cotton from other bales—which means that it actually is blended before reaching the mill. After this process, it is compressed hydraulically and by steam, and neatly packaged with eleven bands.

The even blend characteristic of Egyptian cotton is one of the most important factors in the strong position it has taken in recent years in competition with Delta cotton. Furthermore, it arrives at the mill in first-class condition due to careful packing, and it is remarkably clean. Another strong point in its favor is that each bale in the lot does not have to be hacked open for sampling. A single sample from one bale will tell the story of the entire lot.

Polarized light is very useful in determining the percentage of immature fibers in any lot of cotton.

Dull character often noted in American cotton is thought to be due to a variety of factors, such as moisture, soil, fertilizer, condition of seed, etc. (In connection with this, the work of Coker at Hartsville, S. C., was highly lauded.)

Carolina cotton is improving in quality. Delta quality, while not exactly deteriorating, has suffered considerably from boll weevil and other adverse influences.

Manufacturing Problems

A summary of the remainder of the discussion, more directly related to mill problems, follows:

The new cotton crop, with particular reference to the Delta variety, was said to be much better as to spinnability than other recent crops, although it does not seem to have increased the breaking strength of yarn a great deal.

***DELTA COTTON** of the new crop is much better as to spinnability than similar cotton of other recent crops, according to opinion expressed at the Nov. 20 meeting of the Gaston County Division of S.T.A. at Gastonia. However this improvement does not seem appreciably to have increased the breaking strength of yarn. Several speakers at the meeting reported slightly more fly in this year's crop of Carolina cotton.*

A member reported a break of 103 on 2-ply 60s. Several members said that there is slightly more fly in this year's crop of Carolina cotton.

Concensus was that humidifiers in the picker room would do the cleaning no good, and possibly retard it. No one reported experience with automatically controlled humidity in the picker room, but it was admitted that such a system might have advantages. Most of the men prefer to clean cotton when it is very dry.

From ½ to 2 lb. variation in laps was reported. All agreed that yard-to-yard variation is much greater than total variation between laps. Yard-to-yard variation within 8 per cent was said to be satisfactory.

When spinning begins to run badly, opinion was that the factors which should be checked first are humidity, weights, traverse, and cotton.

Sooty filling wind can be covered up to some extent by running a reverse warp wind, but no satisfactory method of eliminating this condition was suggested.

Self-oiling twister rings were agreed to be a worthwhile investment.

A. P. Richie and S. M. Cauble were elected to serve on the executive committee, succeeding the late W. M. McLoud and R. F. Harris, who resigned. W. N. Williams, J. W. Long, and H. G. Winget were re-elected members of the executive committee. Mr. Dilling, as chairman of the division, continues on the committee.

General Mill Practices

Discussed by Tennessee Division of Southern Textile Association

R. J. McConnell who spoke on general mill practices at Knoxville meeting.

GENERAL mill practices were discussed at the fall meeting of the Tennessee Division of the Southern Textile Association, held Nov. 7 at Knoxville. Blair W. Bingham, overseer of carding, Brookside Mills, Knoxville, is chairman of the group and presided at the meeting. A feature was a paper on general mill practices by R. J. McConnell, general manager of service, Whitin Machine Works, Whitinsville, Mass., (of which an abstract appears among the feature articles of this issue). Highlights of the regular technical discussion follows:

Humidifiers are not necessary in the picker rooms, it was agreed, because the cotton at this stage carries 5 to 6% natural moisture and does not remain in the room long enough to absorb a great deal more. Furthermore, if cotton contains too much moisture, it becomes stringy and difficult to clean.

Chairman Bingham said that ½% or less oil sprayed on cotton will give the best results as a general rule.

It was agreed that roving does not require so much twist today as some spinners seem to think, providing the lay gear and tension are right on the roving frame.

Rolls on roving frames to give the best results should be set as close as possible and worked backwards until the proper setting is reached.

Cork and leather rolls on slubbers, intermediates, and speeders came in for discussion; and, as usual, opinion was greatly divided. However, one interesting point was brought out in connection with leather rolls. A member reported that calfskin rolls could be buffed and dressed very satisfactorily, and cited a case where rolls so treated ran 24 months.

There was a great deal of discussion as to how much variation between laps is justifiable, opinion being divided between 1 and 1½ lb. In connection with this, Mr. McConnell reported results of a test as follows:

"This was made on warp spinning frames from Aug. 6 to Sept. 29, 1928. Four bobbins were taken from each of 390 spinning frames, two from each side and always in the same relative position. Of those frames, 112 were on the third floor and the rest on the fourth floor. That was in one mill. The test was made in the laboratory, but the yarn was not conditioned in skeins as in the case of our regular

products. Every low break was investigated, and the following is an account of the reasons for it:

Causes of Breaks

Roving caused	33 breaks
Top rolls caused	6 breaks
Front steel rolls caused	4 breaks
Builder and cam caused	4 breaks
Total	47 breaks

Variation in Breaks

26 bobbins broke between 70 and 80 lb.
670 bobbins broke between 80 and 90 lb.
801 bobbins broke between 90 and 100 lb.
63 bobbins broke between 100 and 110 lb.

1,560 bobbins were broken, and the grand average was 90.2 lb.

Variation in Number

4 bobbins broke between 23s and 24s
140 bobbins broke between 22s and 23s
1,399 bobbins broke between 20s and 22s
16 bobbins broke between 19s and 20s
1 bobbin broke at 16.35s

1,560 bobbins were weighed, and the grand average was 21.19s

"The weakest break was 21.51s yarn that broke at 70 lb., and the strongest break was 20.16s yarn that broke 110 lb. The grand average was 21.10s yarn that broke 90.2 lb., factor 1,911. Our standard was 21. In other words, over 90% of those bobbins weighed within 5% of the standard. They were all taken from one room that was almost 1,000 ft. long, and from every position in that room. The variation was, as I said, within 5% on all of it. So, to my mind, the point is not how much your lap varies in total weight but how much it varies from yard to yard. Everybody knows that 10% variation is good when you weigh a card sliver from the top cone to the bottom. That might be 5 lb. variation in the total weight of the lap. The important thing is to see that the cotton is going in the machine evenly and to keep the feed just as near level as you can, making sure there is no hesitation in your mechanical parts. Then you will not have more than 1 lb. variation either way, except on starting up in the morning or when somebody does something to the machine during the day. Personally, if I were running a mill, I would not put a lap back for being 1 lb. out of the way, or even 1½ lb. You know from the way pickers are built you get a bunch there on the first yard, and friction on the last yard. So, no matter what you do, you will have a variation there. The thing you have to do is to use judgment."

Larger Packages

Discussed at Eastern Carolina meeting of S.T.A.

THE subject of larger packages, from picking to weaving, was thoroughly analyzed by the Eastern Carolina Division of the Southern Textile Association at its fall meeting, held Oct. 31 at Durham, N. C. P. B. Parks, Jr., manager of Mill No. 5, Erwin Cotton Mills Co., Erwin, N. C., chairman of the group, presided. W. H. Miley, Jr., superintendent of Mill No. 2, Erwin Cotton Mills Co., Erwin, led the discussion. About 200 members were present, and many brought samples of packages for purposes of comparison and study. The officers were highly complimented for the excellence of the program and for the careful preparation which went into it.

Opening the discussion, Mr. Miley explained that the term "larger packages" as used at the meeting referred to heavier packages rather than larger sizes. The subject was discussed according to a three-point outline covering (1) advantages, (2) limitations, and (3) possibilities of increasing size of packages. The following report endeavors to summarize the more important contributions of the members.

Picking. Advantages of heavier laps at the picker are that they facilitate doffing, improve quality of lap, increase production, decrease creeling at the card, and decrease waste at the card. Size of the lap is limited by the calender roll, the back of the card, and by evenness of manufacture. The maximum size of a lap for good results on the card was said to be 48 lb. with a diameter of 19 in. Possibilities of making the lap heavier are by increasing friction, increasing yardage, and improving evenness of screening.

Carding and Drawing. Advantages of heavier packages in carding and drawing (getting more in the cans) are less handling, less falling off at the top, less piecing up, less waste, and less bad work due to changing cans. The amount of sliver which can be put into a can is limited by the distance from the can table to the coiler head, by sliver chafing against the roll, and by the fact that sliver which spills on the floor gets dirty and causes trouble. From 12 to 13 lb. of 53-grain sliver was said to be as much as practicable to put into a 12x36-in. can, although one member reported getting 14 lb. of 56-grain sliver into a can of this size by regulating the humidity of the room. Other possibilities of increasing amount of sliver in cans are by changing the relation between table and coiler head in order to cut down the size of the hole in the center, and by reversing the turn table. No one reported any success with the latter method.

Roving. Advantages of heavier packages in roving are less doffing, less creeling, and less waste. Limitations of the amount which can be put on a bobbin are size of flyer, length of bobbin, build of machine, space in spinning creel, size of taper on spinning, and condition of the presser. Possibilities of increasing the amount of roving on bobbin are by correcting lay, changing bend of presser, and by generally checking up on mechanical condition of machine as a whole.

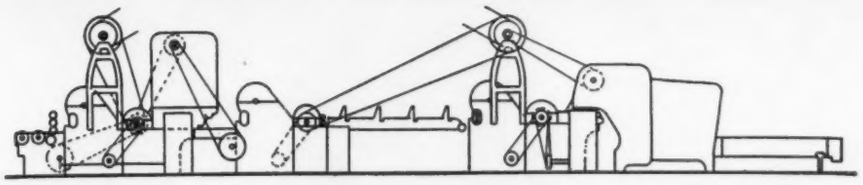
Spinning. Advantages of larger packages on filling are that they save labor, mean fewer changes in cloth (and so insure less possibility of thin places in cloth), less loomfixing, less breakage, less wear on filling quills, and less waste. Limitations are length of shuttle, size of ring, width of shuttle, and degree of taper. Possibilities of increasing amount of filling on bobbin are by correcting lay to give longer quill, putting heavier travelers on frame, checking mechanical condition of frame, speeding up ring rail, changing taper, and using staggered cam arrangement to give shorter stroke.

Advantages of larger packages on warp spinning and twisting are less knots, less waste, less piecing, less doffing, and less labor in winding. Limitations are size of ring, length of bobbin, gage of frame, design of lifting rods, and type of wind. Possibilities of increasing size of packages are by lowering spindle rail and using longer bobbin, increasing size of rings, changing taper, and taking some of the bunch from the bottom of bobbin and shortening the stroke to build up the top, by increasing weight of traveler, and by changing speed of ring rail.

Spooling and warping. Advantages of larger packages in spooling are that they require less doffing and handling and produce fewer knots and less waste. Limitations are insufficient space in the machine to keep the packages from rubbing against each other, and the size of the yarn. Possibilities of increasing size of packages are by lengthening stroke of spooler, and by using spool with thinner head. Advantages of larger packages on warping are longer slasher sets and longer slasher runs, decreased handling of beams, less changes, increased production at the warper and at next process, less waste, and less labor. Limitations are space in the creel, construction of warper, ability of next process to handle more yarn, size of section beam, and dyeing facilities. Chief possibility of increasing amount of yarn on beam is by additional tension.

Slashing and Weaving. Advantages of putting more yarn on the loom beams are less doffing, less tying-in, less waste, less labor, greater production, less warps for the loomfixer to unroll, better face on cloth, faster inspection of cloth, and fewer short cuts of cloth. Possibilities of getting more yarn on warp beam are by running greater tension. Limitations of putting more cloth on rolls are size of the alley, capacity of folding machine, and construction of loom itself.

NEW MACHINERY & PROCESSES



Color-Blending Unit for One-Process Pickers

Blending of stock on one-process pickers has been facilitated by a system which has been developed by Saco-Lowell Shops, 147 Milk St., Boston. Where this system is used for the production of blends containing from 25 to 75% of color, the white cotton is delivered at a predetermined weight per yard by the hopper feeder and a No. 7 evener at the breaker section of the one-process picker. The colored laps, previously prepared, are placed on an apron located in front of the middle section beater, so that a blend is produced when the stock is detached from the vari-colored sheet by the beater of the middle section. It is then delivered to the blending reserve for further blending and cleaning. The delivery from the blending reserve to the beater of the finisher section is regulated by a No. 7 evener.

As an example of how the system works, to produce a blend containing 75% white cotton and 25% blue, the final lap to be 12 oz. with the picker operating at a draft of 4½, the breaker and intermediate section would be arranged to deliver a sheet of white cotton slightly in excess of 40½ oz., while the blue lap would be made to weigh 13½ oz. This would give a total weight per yard of 54 oz. delivered to the finisher section, and a draft of 4½ would produce a finished lap of 12 oz.

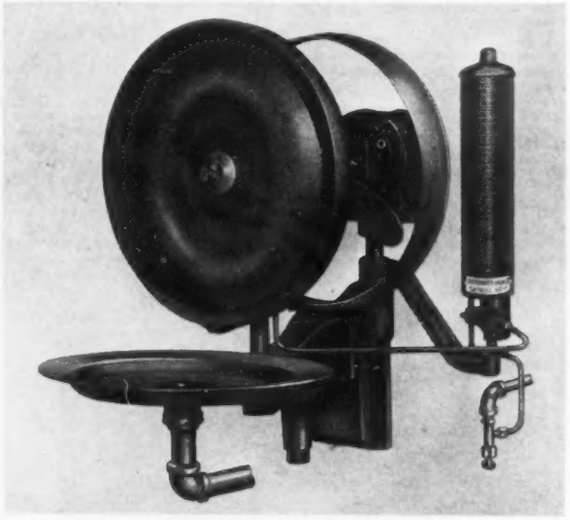
If it is desired to produce a blend with less than 25% of color, a special mechanism is provided. This mechanism is arranged to deliver the colored lap vided. This mechanism is arsection beater. If, say, it is desired to make a blend with only 5% of color, it would be impractical to produce a colored lap that would be light enough to work on the regular system. To overcome this difficulty, a much heavier lap (12, 13, or 14 oz. if necessary) is made and, by means of change gears, the delivery of the colored sheet is regulated so that the correct amount will be added to every yard of white stock delivered.

Flat Bobbin and Shuttle

U. S. Bobbin & Shuttle Co., Lawrence, Mass., is now offering to the trade a flat bobbin and a flat shuttle for weaving silk and rayon. The bobbin is supplied with a velvet finish or enameled for conditioning. The new flat shuttle has the Paterson or Unit tension, designed to give positive tension on the first pick. The principles and advantages of flat bobbins and shuttles were described in an article in TEXTILE WORLD, November, 1936, page 78.

Disk-Type Humidifier

The Model D, improved, disk-type humidifier has been announced by Southworth Machine Co., Portland, Me. In operation, the water passes through a control and is delivered to a revolving disk. As the water comes from the disk with high velocity, it is broken into vapor by the grid, and the vapor is circulated by an air current from a fan of the airplane-propeller type, which is located back of the casing. A totally inclosed motor drives the unit through a flexible coupling and there is no fan thrust on the motor bearings. However, since the humidifying unit is self-contained, an outside source of power can be used. It is also possible to use pulleys in locations in

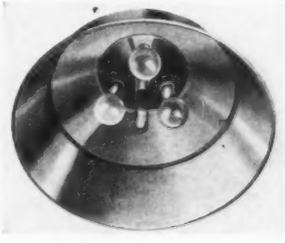


which variations in current necessitate the use of a slow-speed motor.

Each humidifier is provided with a control which is sensitive to the amount of moisture in the air at the place where the humidifying instrument is located. The control will maintain any desired percentage of relative humidity. Once installed, maintenance is said to be a negligible item, and an occasional wiping and cleaning of the unit are all that are required.

Mercury-Mazda Lighting Units

A combination 250-watt, mercury-mazda lighting unit, for use where color correction is necessary, has been brought out by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The units are designed for mounting heights of 8 to 18 ft. Two distinct circuits are used—one to control the mercury lamp, and one to control the Mazda lamps. The design is such as to allow three 60-watt, three 75-watt, or three 100-watt Mazda lamps to be used without interfering with the re-



starting of the mercury lamp in case of a voltage interruption.

The unit consists of an aluminum reflector, with socket assembly and a diffusing glass bowl. The entire socket assembly, which consists of three medium sockets for the Mazda lamps and one socket for the mercury lamp, is attached to the top of the reflector. A slip-type louvered cover provides ventilation for the sockets and allows for wiring or inspection of wiring after the reflector is in position. The diffusing bowl is banded at the fitter and hinged in the reflector.

Explosion-Tested Motors

Type SK explosion-tested, fan-cooled, totally inclosed, d-c. mo-

tors of improved design have been announced by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The brushes and commutator are accessible and the motor is designed with the fan on the commutator. Accessibility is obtained by the use of a double-walled bracket on the end. This bracket is equipped with hand-hole covers which are readily removable to permit inspection and adjustment of the brushes and commutators. The motors are available in sizes from 5 to 75 hp. and for 115, 230, and 550 volts.

Worsted Spindle

A new type of brake is one of the features of the Model XL worsted spindle developed by Prince-Smith & Stells, Ltd., Keighly, England, and marketed in this country by Atkinson, Haserick & Co., 152 Congress St., Boston. The most important part of the assembly is a steel sleeve that is fixed to the spindle rail by means of a nut. The bolster rests upon the sleeve flange and the

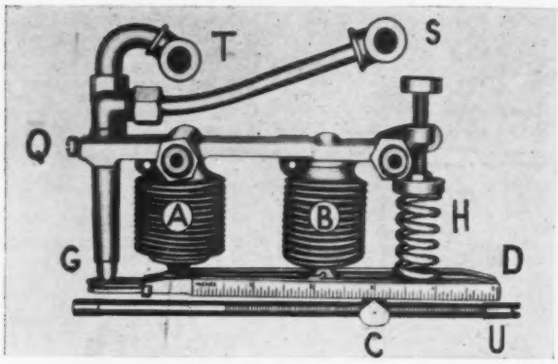
annular fit of the two parts gives precise location to the spindle.

The braking of the spindle is caused by the application of a slight pressure from the operative's knee against the front of a pivoted lever situated just below the spindle rail. This pressure lifts the bolster, and with it the complete spindle unit, from its normal resting position upon the new outer sleeve, and causes the lower flange of the whorl to form contact with a stationary, leather-faced brake shoe. Thus, the spindle blade is not moved in relation to the inner sock, but always remains in its working position. When the brake lever is released, a small spring forces the bolster back to normal position. The brake shoe also prevents the spindle from being lifted out of position in the event of a tightly fitting package being drawn off the spindle.

As the bolster is machined from a solid bar, the possibility of oil leakage is obviated. Cleaning and re-oiling, however, are made easy because the whole spindle can be removed from the machine and replaced without disturbing its setting with relation to the ring. When it is desired to withdraw a spindle unit, the brake shoe is withdrawn until the leather-faced abutment is clear of the whorl flange. When released, it is returned to normal position by a small spring. Model XL spindles have an oil capacity of from 12 to 20 c.c. This volume of oil should retain its lubricating qualities over a period of nine to twelve months, but the manufacturer recommends that oil should be renewed every six months.

Universal Control Unit

Arca Regulators, Inc., 111 Orange St., Bloomfield, N. J., has developed the Arca control instrument, in which the fulcrum is movable to either side of the control spring; i.e., to any desired most efficient position to meet a given control application. Thus, with the one control instrument, it is possible to regulate within close limits many physical conditions, such as pressures both high and low, temperature, all vacuums, flow, level, speed, etc., and the unit can be shifted from



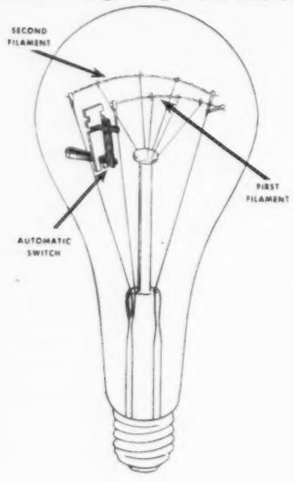
one application to another if desired. All impulses take one of two forms—one similar to a pressure impulse, and the other to a vacuum impulse. With a movable fulcrum, the force exerted by the impulse can act in the opposite direction to the force exerted by the control spring, and the latter can be adjusted to meet any desired constant condition in the physical property to be controlled.

In the new unit, the threaded shaft *U*, shown in the photograph, turns in bearings in the ends of the case. A slot at the end of the shaft makes it possible to insert a tool, turn *U*, and move the fulcrum to the right or to the left. The lever *D* has a scale 5 in. long which serves to indicate the position of the fulcrum. At the left end of the lever there is a flat spring which moves to or from the air nozzle *G* and gives a wide throttling range. This wide throttling range can serve to open a diaphragm-operated valve, so that the openings will depend on the demand.

The amount of initial air pressure as received from the air mains is indicated by a pressure gage mounted in the elbow *T*. The needle valve *Q* serves to throttle down to some desirable lower air pressure. This is indicated in a pressure gage mounted in the tee *S* in the opening shown. The other end of the tee opens out through the back of the instrument case to operate the above-mentioned diaphragm valve. The amount of pressure on the diaphragm air motor as shown on its pressure gage will depend on the bleed of this secondary air at the nozzle *G*.

Two-Filament Lamp

Double-Life Lamp Co., Hoboken, N. J., is marketing an automatic, two-filament lamp that is stated to have a life of at least 2,000 hours. Savings in maintenance costs through longer life and the decrease in labor of changing bulbs are featured by the manufacturer. The two filaments are placed inside the ordinary glass chamber. When the first filament burns out, an automatic switch changes the current to the second filament.



Stainless Truck for Fabrics

Stainless-steel trucks of new design for handling wet or delicate fabrics are now being offered by Stackbin Corp., Providence, R. I. The new inverted bottom, welded sides, and rolled welded edges eliminate the need for all interior bolts or rivets, leaving smooth edges and corners over which material can be pulled without danger. The inverted bottom construction provides drainage around the edges, saving the labor of upending the truck after washing. The channel-steel chassis will carry the entire weight, and the casters are designed to make handling easy. The company will make this truck in any size and for any weight to meet special requirements.

Ribbon Cutter

Operating speeds up to 18,000 strokes per hour are possible with the Flexopress cutter for ribbon, tape, trimming, etc., developed by Paykes Co., 66 East South Water St., Chicago. The built-in, automatic feed is adjustable to any desired length up to 9 in., and where exact positioning of the cut is required, as is label cutting, the action of the feed can be controlled by a specially designed electric eye. The standard model is furnished complete with stand, ¼-hp. motor, and 4-speed drive. Since the cutter is 5 in. in width, narrow tapes, etc., can be cut three or four at a time.

Sheave for V-Belt Drives

The DR (demountable-rim type) sheave has been announced by Dodge Mfg. Corp., Mishawaka, Ind. The new sheave consists of a hub on which rims of varying diameters and number of grooves can be mounted. The rims in turn can be mounted in four different positions, so that the hub can be approximately central or have varying amounts of offset, as required. These features make the DR sheave suitable for installations requiring occasional speed or horsepower variations. The hub is mounted permanently on the motor, engine, or machine shaft, and the rims can be changed as often as required.

Compensated Belts

Two new styles of Condor compensated belt, known as Style F and Style B, have been developed by the Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc., Passaic, N. J. Both have the Condor principle of equalized ply stresses at the arc of contact, but are especially designed for conditions which require some slip.

Style F has a red, friction, pulley surface and is designed for use where a slight starting slip is desired, while Style B has a bareback, untreated-duck, pulley surface and is built for conditions calling for a greater slip, or where slip is essential. There are no differences between the construction of these belts and those of the regular Condor compensated low-tension belt except for the pulley surfaces.

Steam Trap

The No. 312 forged-steel trap, which is designed to take care of high-pressure drips at pressures up to 450 lb. gage, has been placed on the market by Armstrong Machine Works, 715 Maple St., Three Rivers, Mich. The trap uses the inverted-bucket and free-floating-lever operating principles and has only two moving parts. The interior is made of stainless steel, and the valves and seats are heat-treated for maximum toughness. At 450-lb. operating pressure, the trap has a continuous discharge capacity of approximately 2,500 lb. of hot condensate per hour.

De-Ion Linestarters

For cross-the-line starting for single-phase and polyphase, squirrel-cage induction motors, and as primary switches for wound-rotor induction motors, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has designed a line of linestarters employing the De-ion principle of arc interruption. Motor protection is provided by a thermostat disk overload relay. The De-ion arc quencher confines, divides, and extinguishes the arc almost instantly and without flash.

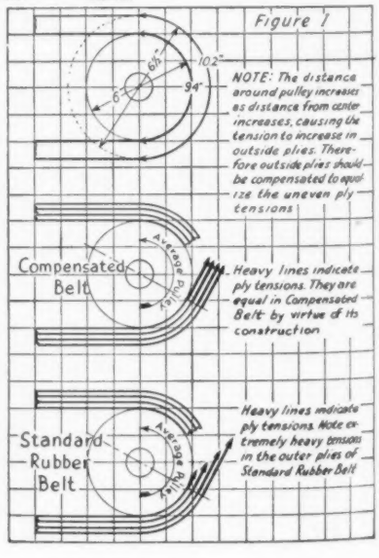


Figure 1
6A"
10.2"
9.4"
6"
NOTE: The distance around pulley increases as distance from center increases, causing the tension to increase in outside plies. Therefore outside plies should be compensated to equalize the uneven ply tensions
Compensated Belt
Average Pulley
Heavy lines indicate ply tensions. They are equal in Compensated Belt by virtue of its construction
Standard Rubber Belt
Average Pulley
Heavy lines indicate ply tensions. Note extremely heavy tensions in the outer plies of Standard Rubber Belt

New Publications

Cotton Carding, by H. H. Willis and Vernette B. Moore; The Textile Foundation, Inc., Commerce Building, Washington, D. C.; multilithed copies obtainable from H. H. Willis, Clemson, S. C., $1.50.

This book offers instruction in the fundamentals of cotton carding. It is the first of a series of six texts on cotton-yarn manufacture being prepared for the Textile Foundation under the direction of a committee headed by F. M. Feiker. The others will deal respectively with classing, opening and picking, drawing and roving, combing, and spinning.

The carding book is a model for both clarity and detail in technical textbooks. It begins with an interesting history of carding and continues with a two-chapter, well-illustrated discussion of the construction and operation of modern cards, with descriptions of all machine parts. Then it takes up "servicing" (that is, cleaning, oiling, stripping, grinding, and burnishing), waste tests, and adjustments. Three later chapters are devoted respectively to card clothing, draft calculations, and production calculations; and a final chapter, entitled "Around the Card Room," discusses personnel, drives, lighting, static electricity, speeds, and special attachments. The appendix includes statistics and a glossary.

The American cotton-textile industry has long awaited a technical literature of its own, and it is gratifying to find the job of preparation at last being undertaken so carefully and thoroughly. This carding book, in conjunction with Professor Gilbert R. Merrill's recent "Cotton Opening and Picking" and "Cotton Drawing and Roving," already presents a fairly complete coverage of the common preparatory operations of spinning mills.

Mechanical Power Transmission Handbook; Wm. Stainar, McGraw-Hill Book Co., 330 West 42nd St. New York; $5.

This book is intended to furnish definite and concise information, to plant superintendents, plant engineers, master mechanics, mechanical designers, etc., on the proper selection and application of mechanical power transmission equipment. In preparing this reference work, the author, who is mechanical power engineer, E. I. du Pont de Nemours & Co., has endeavored to record and correlate all available information, including the latest developments in equipment, methods, and practices. Among the subjects discussed are the following: power-belting, flat-belt pulleys, shafting, bearings, clutches, short-center drives, chain drives, variable-speed control, gear-reduction units, lubrication, motors.

Year Book of the American Association of Textile Chemists & Colorists 1935-36. Howes Publishing Co., 440 Fourth Ave., New York; $3.

The 13th edition of this standard reference book for textile chemists has been completely revised and brought up to date. A valuable new feature is the inclusion of the tentative standard methods for analysis of textile chemicals recommended by the Association's sub-committee on analytical methods. This section of itself makes the 1935-36 edition of the yearbook a "must" in every textile chemist's library.

Arc Welding Handbook, 4th Edition, Lincoln Electric Co., Cleveland, Ohio; $1.50.

In the latest edition of this handbook, 223 pages of new material on arc welding have been added to include all information essential to the use of arc-welding in its various applications. New data presented are on the the following subjects: characteristics of the welding generator, selection of type of joint, insurance of fusion-welded vessels, welding codes, arc cutting, polarity of welding current, horizontal welds, sheet-metal welding, effect of electrode size on welding cost, methods of testing weld metals, 4-6 chrome steel, monel metal, principles of surfacing by welding, welded design begins with standard shapes and plates, and plate girders.

Cotton Year Book for 1936; New York Cotton Exchange, New York.

The New York Cotton Exchange Year Book was prepared under the direction of Alston H. Garside, economist of the Exchange. It contains comprehensive statistics on world supply and world distribution of American and foreign growths of cotton, prices of cotton, yarn, and cloth, mill activity, and other data of interest from a cotton market standpoint. World consumption of cotton during the 1935-36 season established a new all-time high record, according to the year book, which shows that exceeded the largest in any previous season by 1,951,000 bales. World production, on the other hand, was 1,708,000 bales less than the largest world crop in any previous season, and was 1,467,000 bales less than consumption.

Handbook on Flow Meter Engineering, Brown Instrument Co., Philadelphia; $2.

This handbook covers all phases of flow-meter engineering, including principles, designs, applications, and installation. Subjects treated are as follows: general flow-meter engineering, orifice design, steam-flow measurement, water-flow measurement, liquid-flow measurements, and air- and gas-flow measurement.

Lighting Handbook, Revised Edition; Westinghouse Lamp Co., Bloomfield, N. J. 10c.

The new edition of this illumination handbook has been expanded from two to seven sections to include detailed information on specialized fields of lighting. Another new feature is a discussion of high-intensity, mercury-vapor lamps, used either alone or in combination with tungsten filament lamps. Contents are as follows: design of interior lighting installations, design of built-in lighting, design of display lighting, design of sign lighting, design of floodlighting installations, design of underwater lighting installations, and street and highway lighting practice.

Jute and Substitutes, 3rd Edition, N. C. Chaudhury, Chemical Publishing Co., 148 Lafayette St., New York; $6.

Although this book was printed in India in 1933, it has only recently been made available by an American publisher. It treats of the cultivation, manufacture, and trade in jute and jute substitutes. Importers and users of jute and its manufactured products will find in this treatise a large amount of information not readily found elsewhere.

Sampling American Cotton; by S. W. Martin and Florence Cleaves; Division of Cotton Marketing, U. S. Department of Agriculture, Washington, D. C.; mimeographed copies free.

A recent study by the Bureau of Agricultural Economics led to this report on the prevailing methods of drawing samples and the various factors which affect the representativeness of those samples. Consideration was given in the study to ginning and baling practices and to the handling of the samples after they are drawn, as these factors have an important bearing on the proper classification of cotton bales. The authors declare that the importance of proper sampling is too little recognized; and they hope that their report, which is well illustrated, will lead to better and more uniform practices.

Business News

General Dyestuff Corp. has coordinated its various departments under one roof in a newly erected nine-story building at 435 Hudson Street between Leroy and Morton Streets, New York. With the exception of one-half floor tenanted by the General Aniline Works, for which GDC is sole selling agent, the company occupies the entire building. It offers facilities for the efficient operation of the executive and general offices, and ample space for the company's main laboratories, shipping and warehouse rooms. The building is so constructed as to permit the erection of three additional stories should increased business warrant further expansion. Its interior features are thoroughly modern and many of the wall partitions are of the new structural glass brick.

Air & Refrigeration Corp. has opened offices in Charlotte, N. C., with A. W. Bollenbach in charge.

Signode Steel Strapping Co., Chicago, has elected J. S. Gorman vice-president in charge of sales. He has been directing sales for the last five years.

Leipzig Trade Fair will be held from Feb. 28 to Mar 8, inclusive, maintaining its unbroken record through seven centuries. The general pickup in world trade is shown by the 8,000 exhibits gathered from 26 of the leading producing countries, including the United States. It is expected that the business turnover of the Fair will better its average record of $400,000,000 exclusive of reorders. The approaching Fair will be the 1977th session of the historic exchange.

Onyx Oil & Chemical Co., Jersey City, N. J., announces that Dr. Eugene Gansel has joined its staff as field consultant and demonstrator. In extending the company's policy of cooperation and service to the processing trade, Dr. Gansel will render practical mill assistance to dyers and finishers on problems concerning dyeing, bleaching, boiling-off silks, scouring synthetics, printing and finishing. Dr. Gansel is known for his work as "trouble-shooter" over a period of nine years with United Piece Dye Works, Lodi, N. J., and for process development with that company.

Saentis, Inc., 593 Summit Ave., Union City, N J, importer of Saurer narrow-fabric looms, celebrated its 25th anniversary by an open house on Dec. 5.

J. A. Firsching, Inc., Utica, N. Y., manufacturers of textile machinery, will move from 300 Broad St., to larger quarters at 421 to 423 Broad St. Additional manufacturing facilities are provided in the company's new home.

James Talcott, Inc., New York factors, has appointed Laurie C. Dickson as southern manager. He will have headquarters at 147 Brevard St., Charlotte, N. C. Mr. Dickson was formerly vice-president and treasurer of the Stevens Yarn Co., Inc.

Carolina Textile Engraving Co., recently organized, has completed installation of equipment in the Wade Loft Building, Charlotte, N. C. The firm will do engraving for textile printing plants. Officers are John F. Hadley, of Hawthorne, N. J., formerly with Atlas Engraving Co., president, and Clarence E. Stone, secretary and treasurer.

Markem Machine Co., Keene, N. H., has opened a subsidiary plant in the Winnisquam section of Laconia, N. H.

Commercial Investment Trust Corp., New York, has announced the distribution of extra compensation, in excess of regular salaries, to employees of companies in the C.I.T. Group that will amount to approximately $500,000 for the year 1936. The sum is exclusive of amounts for senior executives, and is based upon salary of the employee, length of service and individual performance records.

Atwood Machine Co., Stonington, Conn., has announced the appointment of William R. Gordon as engineer in charge of development and production. Mr. Gordon has had many years of experience in mechanical engineering and has been with General Motors Corp. Eugene Atwood, grandson of the founder of the business and already associated with the company for some years, has been named secretary. Arthur L. Lewis has been made a member of the board of directors, retaining his position as general sales manager.

Robert Reiner, Inc., Weehawken, N. J., has been appointed sole distributor in the United States for Emil Wirth high-speed milanese and tricot knitting machines and for Schlick high-speed sectional beaming machines and creels.

Pennsylvania Salt Mfg. Co., Widener Bldg., Philadelphia, declared a regular dividend of $1 per share and an extra dividend of $2.25 per share, payable Dec. 15.

Hart Products Corp., 1440 Broadway, New York, has appointed Charles C. Clark as southern sales representative, with headquarters at Spartanburg, S. C. He will cover the Carolinas, Virginia and Eastern Tennessee. He will be assisted by Talley W. Piper, who will cover Georgia, Alabama and Mississippi. Mr. Clark has been with the company for the last twelve years and Mr. Piper has had extensive experience in bleaching and finishing. Mr. Clark replaces Samuel Lehrer, who has resigned as vice-president in charge of the southern territory.

Sessions-Gifford Co., Inc., 255 Allens Ave., Providence, R. I., has opened a branch warehouse at 40 Water St., East Cambridge, Mass., and will carry a stock of chemicals, vegetable oils, etc. The branch will be in charge of J. Clark Wyman, who was with Brewer & Co. for seventeen years.

Bausch & Lomb Optical Co., Rochester, N. Y., is sponsoring an investigation at Mellon Institute, Pittsburgh, of the properties of optical glass. The new studies will continue under direction of Dr. F. L. Jones, Bausch & Lomb fellow since 1931.

Torrington (Conn.) **Co.,** has appointed E. G. Paules as representative for the Pacific Coast.

Colgate - Palmolive - Peet Co., Ltd., Toronto, Ont., has started construction on an addition which will cost $200,000 with equipment.

Hercules Powder Co., Wilmington, Del., has announced that it will acquire the assets of its subsidiary, Paper Makers Chemical Corp. The latter concern has been operated as a separate company since 1931.

SKF Industries, Inc., Front St. & Erie Ave., Philadelphia, states that 6,000,000 SKF roller-bearing spindles have now been installed in the world's mills and that 650,000 SKF tension pulleys are in use.

THE PERSONAL PAGE

George Sloan

J. K. Milliken

George A. Sloan has resigned as president and member of the board of George A. Sloan & Co., Inc., and has disposed of his interest in the business. It was announced that the inventory of cotton and worsted fabrics of Amoskeag Mfg. Co. has been sold in behalf of the trustees for Amoskeag, and that arrangements were being worked out with mills and customers regarding uncompleted yarn transactions. Most of the members of the company's staff have made connections with other concerns. Mr. Sloan, who left New York Nov. 27 on a two or three weeks' cruise, has not yet announced his plans for the future.

Joseph K. Milliken of Mt. Hope Finishing Co., was added to the board of directors of Hathaway Mfg. Co., New Bedford, Mass., at the annual meeting.

William T. Reed, Patrick Sweeney, and **Otis M. Dunham** were added to the board of directors of Wamsutta Mills, New Bedford, Mass., at the annual meeting on Nov. 26.

Charles S. Fowler has resigned his position as sales manager of rayon gray goods for Lorraine Mfg. Co., effective Jan. 1, and will be associated with **Charles E. Bloom,** president of Ed. Bloom Co., New York. They will organize a sales agency for rayon and spun rayon fabrics. Mr. Fowler has been with Lorraine since 1928 and prior to that was president of Westerly (R. I.) Textile Co.

John Duff, Jr., has been elected president of Soule Mill, New Bedford, Mass., to succeed his father, the late John Duff.

Randolph Brandt, Jr., has been elevated from assistant treasurer to treasurer of Lockwood Mfg. Co., Waterville, Me.

Harold E. Bishop, for several years executive secretary of Throwsters Research Institute, New York, recently resigned that post to become general manager for Bliss Silk Throwing Co.

O. N. Norris, former president of Quality Hosiery Mill, Murfreesboro, Tenn., and **Daniel Boone,** formerly connected with Cherokee Mill in an executive capacity, have established a new hosiery mill in Chattanooga, Tenn.

William Egolf has been appointed vice-president and general manager of Murray (Ky.) Hosiery Mills. Mr. Egolf was formerly with Paducah Hosiery Mills, which have been succeeded by Murray Hosiery Mills.

Alexander S. Nielson has resigned as manager of Francis Wiley & Co., Boston, to devote his entire time to Barre (Mass.) Wool Combing Co., an allied concern. He has been succeeded by **Kenneth W. Marriner,** who also retains his position as manager of Kenneth W. Marriner Co., Boston.

Dr. Irving Saxl, Providence, R. I., spoke at the recent anniversary meeting of American Institute of Physics, stressing the unexplored realm of research in the physical properties of textile materials.

Hirosi Saito, the Japanese Ambassador to the United States, is greeted at Pennsylvania Station, New York, by Allyn McIntire, vice-president of Pepperell Mfg. Co., as he arrives from Washington to attend dinner in his honor at the Hotel Pierre.

J. H. Marx, Montreal, has been elected president of the Silk Association of Canada, to succeed **W. P. MacDougall,** Montreal.

William Horowitz, New York City, has leased for ten years the Belding Silk Co. mill in Rockville, Conn., now owned by Somerville Mfg. Co., and will operate it as a converting and dyeing plant for silk and rayon. A weaving plant will be added later. **Abner Brooks** has been named chief chemist.

Frank Ford, for the last season with Anathan & Co., New York, and prior to that for many years with Wolfsie Knitting Mills, has become a partner in the firm of Apollo Knitting Mills, New York.

C. J. Hook, superintendent of Piedmont Mills, Gastonia, N. C., has become general superintendent of Piedmont and of another mill at Bessemer City, N. C., controlled by the same interests.

James A. Swainbank, who has been superintendent for Otis Co., Ware, Mass., for several years, has resigned to take a similar position with Nashawena Mills, New Bedford, Mass.

Milo D. Clader, formerly superintendent of Majestic Silk Mills, Allentown, Pa., has joined the reorganized Cedar Crest Silk Mills, Allentown.

R. H. More will be assistant to **Oscar Heineman,** president of Oscar Heineman Corp., Chicago, in a newly created post. Mr. More recently resigned as vice-president and director of Susquehanna Silk Mills.

Buris B. Snow has become superintendent of the No. 2 mill of Bibb Mfg. Co., Macon, Ga., succeeding **M. R. Gardner,** resigned.

D. G. Floyd, of Winnsboro, S. C., has been appointed superintendent of Sanford (N. C.) Cotton Mills.

Southeastern Cottons, Inc., officials, with their fine bag of game brought in at the Sea Island Hunting Preserve, near Sea Island, Ga.—(left to right) seated, James Chapman, Jr., Greenwood, S. C.; M. M. Bryan, Jefferson, Ala.; and Howard E. Coffin, chairman of the Board of Southeastern. Standing is Comer Jennings, Eufaula, Ala. Mr. Coffin and these directors of Southeastern were present for the week-end meeting of Southeastern held at The Cloister Hotel, Sea Island. (Photo by Terhune.)

Textile Calendar

Industrial Art Exhibit of Rayon and Other Synthetic Textiles, Brooklyn (N. Y.) Museum, Dec. 11, 1936, to Jan. 15, 1937.

Twelfth Southern Textile Exposition, Textile Hall, Greenville, S. C., April 5 to 10, 1937.

Southern Textile Association, meeting during show week in Greenville, S. C., April 9.

Knitting Arts Exhibition, Commercial Museum, Philadelphia, April 19 to 23.

Michael E. Ahern, for 25 years an executive of Amoskeag Mfg. Co., has been named to head the employment department in the new Pacific Mills plant in Manchester, N. H.

M. J. Sheehan is now in charge of fabric sales at the Chicago office of Celanese Corp., of America.

Karl E. Wenk, sales manager of the garment division of Duplan Silk Corp., New York, was elected a director of the company at the annual meeting of stockholders.

Jerome R. Allen and **Frederick A. Allis** have been appointed assistant secretaries of James Talcott, Inc. **Walter A. Mohr** has been appointed assistant credit manager in addition to the office of assistant secretary, which he now holds.

J. Douglas Newall has been appointed agent in charge of operations at the Boston Duck Mills and the Bondsville Bleachery & Dye Works in Bondville, both being establishments of the Otis Co. **William G. Stainton,** former agent, has been appointed superintendent of the Otis Co.'s Ware mill to succeed **J. Allen Swainbank. Thomas Hunter** has been appointed superintendent of the Boston Duck mills.

James P. Kinard has been named manager of the cotton gray goods department of William Whitman & Co., New York.

John A. Rose, for the last six years export manager of Allen-A Co., Kenosha, Wis., has resigned and the export department has been abandoned.

John C. Bryan has taken a position with Foster D. Snell, Inc., Brooklyn, N. Y.

Mrs. Richard Reeves has been elected honorary vice-president of Southeastern Cottons, New York. Other new officers elected were: Vice-president, **John Leatham;** assistant vice-presidents, **Frank Mountcastle** and **S. C. Albaugh, Elroy Curtis** and **Howard Coffin,** president and chairman respectively, were re-elected along with the other officers.

VETERAN HOSIERY SALESMAN RETIRES —After 41 years as a hosiery salesman, R. H. Hankinson, of Cooper, Wells & Co., St. Joseph, Mich., retired on pension recently. Mr. Hankinson, now nearing 70, entered the hosiery industry at the age of 13, as a winding machine operator; he started selling while still under 20 and joined the Cooper Wells organization in 1895, representing that company in Missouri for nearly half a century thereafter. At the high point of his career he personally serviced more than 675 accounts. Stating that he wanted to "make room for the younger generation" Mr. Hankinson withdrew from active work last summer and now is enjoying a well-earned rest at his home in Kansas City.

Obituary

James P. Gossett

Gustave Oberlaender

James Chittick

James P. Gossett, aged 76, prominent figure in the cotton-textile industry, died Nov. 8 in a hospital at Greenville, S. C. He was a resident of Williamstown, S. C. Mr. Gossett was a pioneer in the industry and one of the founders of the Cotton-Textile Institute, serving on its board from the date of organization until his death. He was a former president of the American Cotton Manufacturers' Association, was chairman of the boards of Chadwick-Hoskins Co., Charlotte, N. C., Gossett Mills, Anderson, S. C., and the Calhoun Mills, Calhoun Falls, S. C. He was also on the executive committee of the Cotton Manufacturers' Association of South Carolina. He was a native of Spartanburg, S. C., he moved to Williamstown in 1880, and resided there except for four years when he lived at Greenville. He was the father of B. B. Gossett, president of Chadwick-Hoskins Co.

Gustave Oberlaender, aged 69, one of the founders of Berkshire Knitting Mills, Reading, Pa., and treasurer of the concern until his retirement in 1926, died in Reading on Nov. 30. Mr. Oberlaender was born in Dueren, Germany, came to this country in 1888, worked in New York in various capacities, put his savings into a mineral water concern in Indiannapolis, sold out in 1906 and joined his old friends Ferdinand Thun and Henry Jannsen in operating the then small hosiery mill. Mr. Oberlaender was also interested in Textile Machine Works.

James Chittick, aged 73, fabric expert and one of the pioneers in laboratory testing of textiles, died in New York on Dec. 1. Mr. Chittick at one time was with Cheney Bros. and later became manager of the silk department of James McCreery & Co., New York department store, which then operated a silk mill. In 1913 he started his own testing laboratory. He was the author of several technical books and was a contributor to TEXTILE WORLD.

C. Randolph Bennett, aged 52, treasurer of Frank P. Bennett & Co., Inc., Boston, publishers of *American Wool & Cotton Reporter* and *United States Investor,* died in Boston City Hospital on Nov. 29 following an automobile accident. Mr. Bennett was born in Everett, Mass., and was educated at Tufts College and Philadelphia Textile School.

Jean Strengs, aged 48, pioneer and authority on tin weighting work and president of the Novelty Piece Dye Works, died Dec. 3 at his home in Paterson, N. J., of a heart attack. He was born in Lyons, France. He was organizer of Strengs Piece Dye Works which closed two years ago.

Isaac David Einstein, aged 94, president of the International Handkerchief Mfg. Co., and head of the Patchogue-Plymouth Mills Corp., died Dec. 2 after a short illness, at his home in New York. Mr. Einstein had been hailed as "the oldest living pioneer merchant associated with the great white way."

Jacob S. Mauney, aged 90, pioneer textile manufacturer of Kings Mountain, N. C., died at his home there Nov. 13. He was one of the organizers of the town's first textile mill, the Kings Mountain Mfg. Co. in 1888, and continued as president. He was also president of Bonnie Cotton Mills and Mauney Mills, Inc., and helped to organize Cora Mill, Dilling Mills Co., and Sadie Cotton Mill Co.

Cyrus R. Johnston, aged 53, secretary-treasurer of Mooresville (N. C.) Cotton Mills since 1929, died of a heart attack at his home on Nov. 16.

Edwin D. Hague, aged 55, manager of the rayon and cotton northern sales departments of Whitin Machine Works, Whitinsville, Mass., died suddenly at the Massachusetts General Hospital, Boston.

John Wilde, aged 90, one of the founders of John Wilde & Bros., Philadelphia, died last month.

George E. Tucker, aged 93, who worked up through the mill to the position of agent at Otis Co., Ware, Mass., before his retirement in 1925, died Nov. 4.

Lewis Joshua Render, aged 83, an organizer and one of the original directors of the old LaGrange (Ga.) Cotton Mill, now a plant of Callaway Mills, and of the Dixie Cotton Mills, died Nov. 25, at LaGrange.

Gustav H. Uhlig, aged 63, New York representative of Armco Finishing Co., Burlington, N. C., and active for 30 years in the finishing of silks and rayons, died at his home in Weehawken, N. J., Nov. 30. He was a pioneer in the application of piece dyeing of silk goods, founding the firm of Smith & Uhlig in 1907.

TEXTILE WORLD'S

Cotton Digest

WE hear a lot about community activity and community cooperation. Unfortunately, much of it is just stuff that is "heard about"—and not action that can be seen.

The Manchester (N. H.) case is different. There, a group of citizens acting in cooperation with the public utility and other agencies, met an emergency promptly and decisively—and *followed through* with cold cash. The result has been that what appeared to be complete prostration, through the closing of the Amoskeag Mfg. Co., is being modified rapidly; jobs have been saved for thousands of workers and pay-rolls partially restored to the community.

The accomplishment of the Amoskeag Industries, Inc., means a great deal to Manchester. It has a broader significance in that it reflects the real New England spirit, and exemplifies the sort of action that all communities, facing emergencies, might explore.

—*Editor.*

Manufacturers Hold Parleys on Windfall Tax

The Federal government last month moved to collect millions of dollars in windfall taxes from the cotton-textile and other industries under the terms of Title 3 of the 1936 Revenue Act. Tax-collection machinery of the Bureau of Internal Revenue was thrown into high gear as it was made known that all district collectors had on hand ample supplies of tax return forms which were to be filled out and returned by December 15.

Cotton-textile manufacturers met at Charlotte, N. C., Greenville, S. C., and other central points for the purpose of discussing the tax law. Dr. Claudius T. Murchison, president of the Cotton-Textile Institute, and several legal experts were present to help explain the situation to manufacturers.

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Prices Hit Highest Level Since 1929

Most of November was featured with heavy buying of nearly all types of gray goods, and prices in many instances were the highest since 1929. Large quantities of goods were sold for delivery in April, May and June—notably 39 in., 80x80s which brought anywhere from 11½c. for spots to 9¼c. for April and forward. The largest producers of flannels were reported to have sold a major part of their production through October, 1937. The month end was quieter, with prices holding very strong. Conservative mills were beginning to caution customers against over-commitments.

Cotton-yarn spinners were sold further ahead during November than in many years. Carded-yarn mills were said to have orders booked through the middle of 1937, while combed yarn spinners and mercerizers have sold into next June. Some spinners were reported to have withdrawn prices pending developments on legislation, labor demands and other cost essentials. Also, protecting clauses began to appear on future contracts. However, yarn could be had, if the buyer would pay prices demanded, and if the deliveries were suitable.

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Second Half 1935 Shows Gain—F.T.C.

Cotton textile manufacturing companies covered in the latest report of the Federal Trade Commission were, on the whole, more prosperous during the last half of 1935 than during the preceding six months' period. The number of companies examined is about 3% smaller than the total covered in the preceding report. The average rate of return on textile investment as shown, follows:

	Companies	Second Half 1935	First Half 1935*
109	Spinning	1.15%	1.34%†
64	Weaving	0.32%	0.81%
295	Spinning and weaving	0.63%	1.63%†
8	Stock dyeing and finishing	0.63%	1.01%†
87	Commission dyeing and finishing	0.12%†	1.21%
18	Thread manufacturing	2.91%	4.24%

*—113 spinning, 72 weaving, 302 spinning and weaving, 11 stock dyeing and finishing, 84 commission dyeing and finishing, and 18 (not identical) thread manufacturing.

†—loss.

Prices and Activity

Key cotton prices of Dec. 1 and a month ago contrasted with those of the last two years follow:

	Dec. 1, 1936	Nov. 2, 1936	Dec. 2, 1935	Dec. 1, 1934
Spot Cotton, N. Y.	12.58	12.08	12.15	12.75
Ditto, high previous month	12.43	12.64	12.45	12.85
Ditto, low previous month	12.08	12.01	11.35	12.25
10s hosiery cones	28½	26	30	27
10s-2 carded skeins	28½	26	30	27½
20s-2 carded peeler warps	32½	29½	33	30
60s-2 combed peeler warps	60	55	59	54
60s-2 mercerized cones	72	69	72	70
37 in., 3-yd. drill	9½	9 1/16	9 1/16	9½
38½-in. 64 x 60s	7 5/16	7 1/16	6 15/16	6½
36-in. 4-yd. 56 x 60s	8½	7 15/16	8½	7½
Denim, 2.20s	15	14	15½	15

Statistics of particular interest to cotton manufacturers showing October operations and the raw material situation:

Spindle activity	123.3% capacity, or 8,328,468,743 spindle hours
Cotton consumed	646,499 bales
Cotton exported	861,016 bales
Cotton imported	9,944 bales
Cotton ginned to Nov. 14	10,766,378 bales

September operations for comparison:

Spindle activity	125.8% capacity, or 8,088,255,427 spindle hours
Cotton consumed	629,727 bales
Cotton exported	569,624 bales
Cotton imported	9,162 bales
Cotton ginned to Oct. 1	6,030,940 bales

Fabric and yarn manufacturing margins follow:

TABLE I. CARDED FABRIC MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933	21.4	September, 1935	17.9
October, 1933	19.1	October, 1935	17.7
January, 1934	18.4	November, 1935	16.4
April, 1934	17.6	December, 1935	16.2
July, 1934	15.5	January, 1936	17.2
August, 1934	16.6	February, 1936	16.5
September, 1934	18.6	March, 1936	15.5
October, 1934	17.4	April, 1936	14.3
November, 1934	15.8	May, 1936	14.3
December, 1934	16.2	June, 1936	15.3
January, 1935	16.2	July, 1936	16.9
February, 1935	16.0	August, 1936	18.0
March, 1935	15.9	September, 1936	18.4
April, 1935	16.1	October, 1936	21.2
May, 1935	16.0	November, 1936	25.4
June, 1935	16.5	Nov. 4	22.6
July, 1935	15.2	Nov. 10	25.0
August, 1935	17.1	Nov. 11	26.5
		Nov. 18	27.6

TABLE II. CARDED YARN MARGIN

Date	Margin in cents	Date	Margin in cents
August, 1933	23.5	September, 1935	15.4
October, 1933	20.0	October, 1935	15.8
January, 1934	18.3	November, 1935	16.3
April, 1934	15.9	December, 1935	16.3
July, 1934	14.7	January, 1936	18.4
August, 1934	15.3	February, 1936	17.5
September, 1934	15.6	March, 1936	16.3
October, 1934	14.6	April, 1936	15.6
November, 1934	13.5	May, 1936	14.8
December, 1934	13.5	June, 1936	14.6
January, 1935	13.5	July, 1936	15.0
February, 1935	13.9	August, 1936	16.5
March, 1935	14.4	September, 1936	16.5
April, 1935	14.1	October, 1936	17.2
May, 1935	13.8	November, 1936	18.0
June, 1935	14.5	Nov. 4	17.3
July, 1935	14.3	Nov. 10	17.9
August, 1935	15.3	Nov. 11	18.0
		Nov. 12	18.9

Coronation Cottons—Coronation cottons of 1911 when George V ascended to the British throne contrasted with the coronation cottons of 1937 which will be a fashion favorite incident to the crowning of King George VI next May, were shown at a style show held Nov. 24, at the Waldorf-Astoria Hotel, New York, under the auspices of the Cotton-Textile Institute. The aim of the event, as expressed in the program, was to emphasize that "King Cotton, America's own democratic monarch, is again invested with the crown and sceptre of fashion for 1937."

"Up-and-Down Clauses" Again Harass Market

"Up-and-down clauses" similar to those used during the period of NRA and AAA have been coming back into use in New York markets. Buyers say that naturally they are not happy about having to deal again with these "strings," but they understand, as do the sellers, that the industry undoubtedly is headed for industrial legislation which will affect costs of production.

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Kendall Expands

Purchase of all the common stock of 136,000-spindle Pelzer (S. C.) Mills (formerly Pelzer Mfg. Co.) brings the total of spindles controlled by Kendall Co., Boston, up to 360,000. Pelzer was founded in 1880 and was sold by the family to Lockwood, Greene & Co. in 1923. Later the mill became one of the New England Southern group and just last April it was purchased by J. P. Stockton and associates. In 1895 the mill pioneered in running on electric power, but so distrustful were people of the venture that the company's stock declined $20 a share in the Charleston market when the plans were announced. P.S. It worked.

Operations will be continued in charge of J. F. Blackman without material change in personnel. Lockwood, Greene & Co., comes back into the picture as engineers in charge of the extensive improvements in buildings and machinery that will be made.

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Industry Notes

The U. S. Supreme Court on Dec. 7 upheld laws permitting agreements between retailers and wholesalers to fix and maintain established prices for trade marked and branded goods. The decision eliminates price-cutting on branded textile merchandise by distributor outlets.

Southern Combed Yarn Spinners Association has removed its offices to the top floor of the Bank of Commerce Building, Gastonia, N. C. Telephone number remains unchanged: Gastonia 1172.

Carded yarn mill officials met early in December at Charlotte, N. C., for the purpose of discussing ways of improving the price situation in carded yarns.

A new reinforced hemstitching has been patented by Cannon Mills, Inc., which is said not to weaken the sheet fabric or shorten its service—eliminating the chief criticism of the regular-type hemstitched sheets.

Crop insurance programs covering cotton, wheat and corn have been discussed during the fall by the President's committee on crop insurance. Secretary Wallace, chairman of the committee, said no recommendations have been agreed upon but that plans under consideration contemplate insuring yields, not prices.

Bliss Fabyan & Co. has successfully prosecuted a suit in Superior Court, Baltimore, against a customer who withheld payment for goods sold and delivered to him under allegation that the sum was an offset against his claim for processing tax involved.

Cotton Forecast—The Dec. 8 report estimates season's total 12,407,000 bales; ginned to Dec. 1, 11,494,170.

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Cotton Mill News

West Point Mfg. Co., Fairfax, Ala., is equipping its automatic spoolers with vacuum lint and dust collectors installed by Textile Shop, Spartanburg, S. C.

Raucher Mfg. Co., Norwich, Conn., has started construction of a two-story mill addition, 20x50 ft., to cost $5,000. The dimensions and cost were erroneously reported in the last issue.

Swift Mfg. Co., Columbus, Ga., has awarded contract to A. K. Adams Co., Atlanta, Ga., for a three-story cotton warehouse. It will cost $60,000.

Roswell (Ga.) Mills, Inc., are completing construction of a large addition to Mill No. 2, in course of erection for several months, and will equip for a new weave shed. Batson-Cook Co., West Point, Ga., is general contractor.

Burton-Dixie Corp., Chicago, Ill., has filed plans for two-story addition to mill, 17x125 ft., and will begin superstructure at once. B. Klekamp is architect.

Western Shade Cloth Co., Chicago, Ill. has awarded general contract to H. F. Friestedt Co. for remodeling and improving mill at cost of about $35,000.

Highland Park Mfg. Co., No. 3 plant, Charlotte, N. C., has replaced about 37,000 spindles with new long-draft Saco-Lowell frames.

Carolina Webbing Co., Greensboro, N. C., has plans maturing for installation of additional equipment to provide considerable increase in present capacity.

Waverly Mills, Inc., Laurinburg, N. C., has changed one unit from yarn manufacturing to the production of shoe laces and other braiding.

City Cotton Mill, Newton, N. C., has begun superstructure for one-story addition to mill, to provide for considerable increased capacity. Additional spindles and looms will be installed. Expansion is reported to cost $40,000, including equipment.

York (Pa.) Narrow Fabrics Co. has awarded a contract to H. L. Hamme, York, for construction of the first unit of an addition to its plant. Completion of the unit, of brick, steel and concrete construction, will result in stepping up production 50%. The second unit will be built early in the Spring.

Clinton (S. C.) Cotton Mills have added 92 looms, making the number now in the plant 1,792.

American Spinning Co., Greenville, S. C., plans expansion and improvements in mill, including complete modernization of present units. New buildings will be erected and large increase made in plant equipment, with installation of about 17,400 long-draft spindles and auxiliary equipment. Entire project will cost close to $250,000, and will be carried out early in 1937. Company recently arranged for a merger with Florence Mills, Forest City, N. C.

Arbeka Webbing Co., Pawtucket, R. I., has completed construction of one-story addition to mill, totaling about 5000 sq. ft. floor space, and will use in part for expansion in finishing division.

Herron Twine & Yarn Mills, new industry in New South Memphis, Tenn. started operations the second week in November with 25 workers.

Canadian Cottons, Ltd., is installing 58 revolving flat cards in its mills at Cornwall and Hamilton, Ont. The equipment, which is being installed to replace cards that have been in operations for many years, is made by Platt Bros. & Co. Ltd., Oldham, Eng.

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Cotton Financial Notes

Lowe Mills, Huntsville, Ala., idle since it went into bankruptcy in 1932, was sold Nov. 18 to J. F. Ames, of Selma, Ala., operator of Ames Bag Co., Selma and Selma Mfg. Co., Birmingham. The price paid was $31,000. Mr. Ames stated that he had no plans at present for operation of the mill.

S. Slater & Sons, Inc., Webster, Mass., have appointed George D. Flynn, Jr., Fall River, Mass., as liquidating agent. The mill has 70,000 spindles and 1,200 looms.

Dilling Mills Co., Kings Mountain, N. C., was purchased at auction on Nov. 23 by Phenix Mills Co., also of Kings Mountain, for $125,000. Dilling has 14,000 spinning and 6,000 twister spindles on cotton yarns, and 272 looms for rayon dress goods. Earl A. Hamrick, president of Phenix, states the rayon looms will be disposed of and additional cotton spinning equipment installed.

Wamsutta Mills, New Bedford, Mass., reports net earnings of $156,789 for year ended Sept. 30, 1936; compared with net loss of $82,036 previous year.

United Merchants & Mfgrs., Inc., New York, reports net profit of $1,494,337 for the year ended July 31, 1936. Net profit the previous year was $772,919.

Standard-Coosa-Thatcher Co., Chattanooga, Tenn., reports consolidated net profit of $241,870 for the year ended Sept. 30, 1936.

Columbus (Ga.) Mfg. Co., reports net profit of $57,663 for the year ended Aug. 31, 1936.

Berkshire Fine Spinning Associates, Adams, Mass., report net profit of $72,833 for the year ended Sept. 30, 1936.

Richard Borden Mfg. Co., Fall River, Mass., netted $843 after all charges for the year ended Sept. 26, 1936.

Hathaway Mfg. Co., New Bedford, Mass., reports net profit of $253,325 for the year ended Sept. 26, 1936.

Kilburn Mill, New Bedford, Mass., reports net profit of $11,104 for the year ended Oct. 3, 1936.

Otis Co., Ware, Mass., reports net loss of $278,328 for the 51 weeks ended Sept. 26, 1936. There was a profit before depreciation and other charges of $52,146.

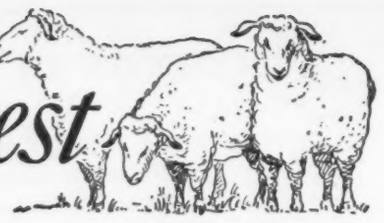
Cohn-Hall-Marx Co., New York, reports net profit of $892,958 for the year ended July 31, 1936.

George Royle & Co., Philadelphia, Pa., have acquired mill and equipment of **Charles B. Bennett Co.,** manufacturer of plushes, at a receiver's sale, for a reported consideration of $31,500. New owner will continue plant in service for plush production.

B. B. & R. Knight Corp., Providence, R. I., is arranging early organization of new corporation under name of Fruit of the Loom, Inc., in connection with reorganization plans.

TEXTILE WORLD'S

Wool Digest



THE action of woolen and worsted manufacturers in raising wages last month represented industrial leadership at its best. Too often in the past, resistance to such action, even at a time when it was clearly in the cards, has been so strong that when it did finally come it was a grudging step, devoid of the good-will value which last month's increase had.

We believe the difference between then and now reflects the improved attitude in industry generally, as well as the more cooperative spirit extant in the wool textile industry specifically. For the latter, the manufacturers' association deserves credit.

We also think Austin T. Levy, president of the Stillwater Worsted Mills, should take a bow. His initial announcement of a wage increase—with plenty of publicity—helped to crystallize opinion and to hasten similar action by the industry as a whole. We know that some people like to "pick on" Mr. Levy—and that many claim the rate of his increase is too high for most other mills. The fact is, however, that the man who has the courage to stick his neck out always comes in for criticism. The main thing to remember is that courage of that sort has been responsible for our major economic and social advances.—*Editor.*

Evidences of Boom in Wool Goods

Brisk business and sharp price advances marked November in the wool goods market. Men's wear lines for spring were up 15 to 30c. per yard over opening prices before the end of the month. For many mills the third price advance was announced around Nov. 20. This was anticipated by the fact that about a week previous lines had been withdrawn by the major producers to permit repricing in relation to the 10% wage advance and other increased costs. It is thought likely that some lines will soon be withdrawn as sold up for the season. A fourth price advance was made by a leading company on Dec. 2, making full rise over opening as much as 40c. per yd.

A flood of orders came in during November so that trade estimates of unfilled orders for men's wear exceeded 38,000,000 linear yards at the end of the month, a gain of nearly 10,000,000 since October. In women's wear the figure was 9,000,000, an increase of only 1,000,000, but significant because this is normally a time when the figure would decline. Women's wear has not gone far with spring, but buyers are understood to be ready to place early business when mills offer their lines. Garment sales are reported 20 to 25% ahead of a year ago.

At least two men's clothiers have advanced prices on suits, the rise being 50 to 75c. per garment. A greater change is warranted by the jump in piece goods and many clothiers are urging mills to put out supplementary lines in order to keep a representative group of fabrics in their expected price ranges. The extent to which fancies have predominated this season is a factor in clouding the comparison of intrinsic values.

As the month closed general business in wool goods lessened as mills had fewer goods on offer. Cold weather started up call for seasonal goods including overcoatings, snow suitings and sports lines. Stocks were nearly exhausted but a few mills accepted orders for delivery over the next few months.

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H. E. Fulton Heads Overseers Association

The fifty-third annual meeting of the National Association of Woolen and Worsted Overseers was held at the Hotel Manger, Boston, Nov. 21. Herbert E. Fulton of Sanford, Me., was elected president succeeding John C. Marley. Two other vice-presidents were elevated one step, Clarence L. Cutler to first vice-president and Bernard J. O'Reilly to second vice-president. Tom Parkin was reelected treasurer and James J. Burns, secretary. The only contested office—third vice-president—resulted in election of George W. Swallow over four other contestants.

At the start of the meeting 56 new members were elected to the association and the names of 50 applicants for membership received and turned over to the investigating committee. Eight deaths since the May meeting were reported. It was voted that the entertainment at this particular meeting be paid out of the association's general fund. Registration showed an attendance of 162.

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H. J. Blake Heads Boston Wood Dealers

At the meeting which marked completion of 25 years of its existence, the Boston Wool Trade Association elected H. J. Blake of Blake & Kendall Co. as its new president succeeding George L. Anderson. Robert W. Dana, of Draper & Co., was chosen vice-president; L. Willard Bigelow, secretary, and F. Nathaniel Perkins, treasurer.

The executive committee named is composed of Charles W. Brown, Jr.; Orville W. Forte, Durham Jones, D. Morley Lodge, H. Clyde Moore, Hugh Munro and Robert L. Studley. The arbitration committee consists of Thomas C. Thacher, Jr., chairman; Eliot Bicknell, Ferdinand B. Brigham, R. Perry Collins and Sigmund Leve.

Arthur Besse, president of the N.A.W.M. spoke briefly on the improved position of the industry and stressed the importance of the part played by Associated Wool Industries in promoting consumption. Other speakers also praised this cooperative effort supported by growers, dealers and mill men. Growers' contributions this season represented 40,000,000 lb. of wool.

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Wool Investigators to See Tax Returns

An executive order issued from the White House on Nov. 2 authorized the special Senate Committee investigating wool production, transportation and marketing, to inspect income, profits and capital stock tax returns.

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Prices and Statistics

Key wool prices of Dec. 1 and a month ago, contrasted with those of the last two years:

	Dec. 1, 1936	Nov. 2, 1936	Dec. 1, 1935	Dec. 1, 1934
Fine and fine med. territory	$1.02	$0.88	$0.76	$0.72
Ohio ⅜s	.47	.40½	.38½	.29½
Tops fine 64–66s	1.30	1.13	1.04	.94
average ⅜s	1.10	.95	.91	.79
high ½	1.02	.88	.84	.72
Noils, fine	.75	.68	.66½	.52
½	.60	.55	.50½	.40
2–40s 60s wstd yarn	1.75	1.55	1.48½	1.36½
8020 serge	2.05	1.87½	Not quoted	Not quoted

Current statistics on wool consumption and mill activity follow, activity percentage based on single 40-hour shift, 5 days per week. September is a 4-week month; October, 5-week month.

Wool consumed clean equiv.	*Sept.*	*Oct.*
Apparel wool, lbs	21,476,000	25,900,000
Carpet wool, lbs	9,160,000	11,660,000
Machinery activity		
Looms (50" and wider)	83.2%	91.0%
Carpet looms	76.9%	83.7%
Combs	118.1%	119.9%
Worsted spindles	80.6%	92.6%
Woolen spindles	112.9%	115.3%

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New Top Contract Launched on Rising Market

A new form of contract was unanimously adopted by the New York Wool Top Exchange on Nov. 12. It is designed to reflect more closely the values of domestic wool, since the former contract reflected foreign wool more closely and values of domestic wool have increased out of proportion to the relationship with the finer foreign wools which had previously obtained. February is the earliest month to carry the new contract and August the most distant one to which the old will be carried. The new contract showed a premium of 4 to 5.6c. when first traded in; at the close of No-

vember the premium ranged from 3.5 to 5.5c.

Wool tops were bouyant during most of November, but irregular at the close after a rise of about 10c. for the month. The high for spots was $1.20½ touched Nov. 20. Raw wools in Boston were up 15c. per lb., or more, to the close of November. Spot tops were $1.22 on Dec. 4.

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Worsted Yarns Quiet After Rise

Worsted yarns were marked up 10c. per lb. in as many days during the hectic period of mid-November. French spun 2-40s, 64s, were quoted at $1.72½ but many called the figure nominal because the first effect of the advance was to repel buying. There is more wool underwear in distribution this winter than for some time and demand for yarns is considered strong enough to establish the new levels without much delay.

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Spurt in Rags

A spurt in woolen rags began early in November after the upturn in wool was underway and the prospect of a raw material scarcity was clear. Demand for rags first hit light loads and white stocks, then fine light merinos. Early orders went at 21c. and in two weeks 29c. was the figure. Similarly mixed softs went from 13c. to 17c. and dark worsteds from 10c. to 15c.

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Wool Industry Briefs

Preliminary estimate of the world production of raw wool (grease basis) for the 1935-36 season by the Imperial Economic Committee indicates little change from last season, the 1935-36 total being 3,668,400,000 lb. against 3,680,800,000 in 1934-35, but well below the annual total of over 380 millions in the years 1928 to 1933. Sectional estimates follow: United States, 452,700,000; South America, 568,100,000; Australia, 963,000,000; New Zealand, 272,000,000; United Kingdom, 109,000,000; Asia, 351,600,000; and Africa, 363,100,000.

Samuel Hird & Sons, Inc., on Nov. 20 reinstated their range 612 at $1.70 (up 20c. from opening) and their range 4000 at $2.00 (up 25c.).

American Woolen Co. has priced serge 8020 at $2.15 (up 32½c.). All-worsted gabardines are up 35c., tropicals are up to 27½c., manipulated suitings are up 17½ to 22½c. Worsteds are up 30 to 40c. These include advances made on Dec. 2.

Herbert R. Leeds & Co. have advanced W. J. Dickey ranges 69 and 869 to $1.55 base.

The U.T.W. on Nov. 12 voted to support a demand for a 20% wage increase disregarding the 10% increase then being made by manufacturers. Report of the wage situation in the textile field as a whole (including the wool textile branch) will be found elsewhere in this issue.

Textile Color Card Association has issued the regular spring 1937 woolen card with 48 colors. A special feature is a group of 12 "polo colors" for Southern resort and cruise wear.

Because only two bidders offered 18 oz. serge and 24 oz. elastique to the army on the basis of completion in 180 days, the bids are being asked for again with completion in 240 days specified—opening will be on Dec. 23.

S. Stroock & Co. has set up a model in the N. Y. Museum of Science and Industry showing the process of manufacture of camel hair and vicuna.

Sidney Blumenthal & Co. showed a loom in process of weaving mohair velvet for upholstery at the recent New York Automobile Show.

A teaching portfolio titled "Fall '36, Wool—Fashion's First Choice," has been released by Associated Wool Industries, to a selected list of 5000 leaders in the educational field, including supervisors of home making in city and State departments of education, textile teachers in high schools and colleges, State clothing specialists and girls' club leaders. The bulletin features not only the preferability of wool, but its practicality.

"Wool and Mohair," a new educational chart describing and illustrating various processes in the manufacture of wool and mohair, is being issued by Associated Wool Industries for use by textile and home economic teachers as well as by training directors of department stores.

Two important current trends — increased use of wool in formal evening wear, and widening of velvet markets due to popularity of the crush-resist process — are exemplified in this new formal evening wrap, designed by Capt. Edward Molyneux, noted European fashion creator. The outer fabric is a blue wool of tweed construction. The wrap, being lined with velvet, collar and cuffs also of velvet, has sufficient warmth for mid-winter use, the Velvet Guild points out. Sketch by courtesy Countess de Clairville.

WOOL IN THIS ISSUE

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Wool Mill News

Lapeer Woolen Mills, Inc., Columbia, Mich., recently acquired by Joseph Baumgarten, president, Hillsdale (Mich.) Mfg. Co., manufacturer of clothing, have work under way on alterations and improvements, including modernization of entire plant. Machinery and facilities will be provided for 200 operatives. Production will be started in near future on basis of about 150,000 yd. per month, all of which will be used by the purchasing company at its factories at Hillsdale and Coldwater, Mich.

Per Mano, Inc., Carthage, N. C., is a newly organized concern for the manufacture of handwoven tweed goods.

Yorkshire Worsted Mills, Lenni Mills, Pa., have taken over plant and business of **Bernon Worsted Mills,** Woonsocket, R. I., and will operate as an affiliated plant, continuing production on present basis. A subsidiary interest is being organized to own and operate the mill.

Orr Felt & Blanket Co., Piqua, Ohio, have installed a H-W Conditioner for twist setting.

Rock River Woolen Mills, Janesville, Wis., has completed construction of a $5,000 third-floor addition on one section of its plant.

Prairie du Chien (Wis.) Woolen Mill Co. is making improvements totaling $4,000 at its mill. A hydraulic elevator and a tramway from the warehouse to the picking room to handle the bales of raw material are being installed.

Sunalta Woolen Mills Syndicate has completed arrangements for establishment of woolen mill at Silver Springs, B. C., Canada. The concrete foundations of the mill, 112x184 ft., are now being poured and construction will follow shortly. The projected plant will have a capacity of 1,000,000 lb. of wool, grease weight, annually, and will process the raw Alberta wool into finished yarns.

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Wool Financial News

Alexander Brick Woolens, Inc., Los Angeles, Cal., has been organized with capital of $150,000, to operate a local mill. New company is headed by Alexander Brick and Sidney Mayer. It is represented by Pacht, Pelton, Warne & Black, Union Bank Bldg., Los Angeles, attorneys.

Canterbury Mills, Inc., Portland, Me. has been incorporated under Maine laws with capital stock of $25,000. Incorporation papers said the purpose of the firm was to carry on the business of manufacturing and dealing in woolen, worsted, cotton, silk, rayon and other fabrics and yarns of all sorts. P. E. Coyle, Brookline, Mass., and J. G. S. Humphreys, Andover, Mass., were listed as president and treasurer, respectively.

Sterling Worsted Mills, Worcester, Mass., were purchased at public auction on Nov. 6 by John J. Moynihan, an attorney, who paid $64,378 for the plant and $3,400 for the equipment.

American Hair & Felt Co., New York, reports net profit of $373,808 for the nine months ended Sept. 30, 1936.

Botany Worsted Mills, Passaic, N. J., has secured approval from Federal District Court to carry out a merger with its holding company, Botany Consolidated Mills, Inc., which has been in bankruptcy since 1932. The assets will be taken over and last-noted company dissolved. Botany Worsted Mills will continue with same officers and under same management as heretofore.

TEXTILE WORLD'S

Rayon & Silk Digest

IT'S too bad that rayon weavers, in a body, could not have attended the convention of the Cotton Manufacturers Association of North Carolina at Pinehurst last month. They would have heard some unpalatable but important comments from former Governor O. Max Gardner.

Here is a fair sample: "The rayon weaving industry offers a fine example of the perils of the third shift. It makes both my pocketbook and my heart sick to see the third-shift looms of the rayon weavers turning out millions of yards of dress goods today and selling these desired materials at a price insufficient in many instances to cover the cost of labor and material. I do not hesitate to say that this condition is directly attributable to the menace of the third shift."

We know this is a fine way to start an argument—and even a fight—but we "do not hesitate" to agree with the governor.

It isn't just that it's the third shift—but that the operation of three shifts in this particular field either gluts the market, or produces a fear of such glut. Both effects have the same influence on prices.

In any event, rayon weavers might study this statement by Gov. Gardner: "I am absolutely satisfied that if the rayon weavers were to eliminate the third shift, every yard of dress goods two shifts could produce would sell for a reasonable profit." He may be wrong, of course, but if we were a rayon weaver we'd make it our business to find out whether he is or not.—*Editor.*

U. S. Rayon Capacity Up 25% By 1938?

The present expansion program of the rayon yarn industry will bring capacity up to slightly over 400,000,000 lb. yearly, by the first quarter of 1938, it is estimated in the December *Rayon Organon.* This rise, the *Organon* states, would represent an increase of about 25% over the November 1936 capacity which is approximately 325,000,000 lb., based on 150 denier. These figures are developed from a study just completed by the *Organon,* and do not include staple fiber. In estimating 1938 output, two points are emphasized: First, that the expansion figure represents only "present intentions" of producers, and second, that normal increase in demand in 1937 and 1938 may be expected to aggravate the present shortage. The publication notes further that expansion between late 1933 and the present has been slower than at any similar earlier period in the industry's history.

"Although the projected 1938 capacity may seem large," the statement concludes, "possibly it may be viewed simply as a delayed estimate of rayon's true, increasing place in the textile industry."

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Acetate Prices Rising?

Expectation of an advance in acetate yarn prices served as a spur—if any was needed—to rayon buying as the final month of 1936 opened. Demand held strong in all divisions; accelerated call for acetates, plus the reduced production at that end due to a strike brought acetate stocks down to the levels of viscose—or less than ⅓ of a month's supply. A price advance of one to ten cents on finer deniers was announced Dec. 7 by American Bemberg Corp.

•

Raw Silk Perks Up

Low stocks and active buying made November a rather hectic month in the raw silk market. Between Nov. 2 and Nov. 24 Commodity Exchange, New York, prices of crack double extra 13/15 white 78% rose from $1.82 to $1.96. However, uptown trading prices were stronger than this might indicate, and at times silk reached the coveted $2.00 position. Broadly speaking, levels have risen about 25c. in the last month. All signs pointed to a strong consumption figure for November; while part of the coverage was speculative, there was also a good call for silk for immediate use.

•

Lewis and Palmer Address Technologists

Continuing its consideration of silk manufacturing problems, which began at the November meeting with talks by W. P. Seem, G. J. Schautz, Jr., A. Haffner, and H. Shiga, the American Association of Textile Technologists heard on Dec. 2, at the Hotel Wolcott, New York, a discussion of throwing machinery by A. L. Lewis, of Atwood Machine Co. At the same meeting, Albert Palmer, of Crompton & Knowles Loom Works, discussed his methods of analyzing and improving weave-room efficiency and presented a slow-motion picture disclosing little-known details of loom operation.

•

Current Rayon Data

Key rayon prices and statistics follow:

Prices	Dec. 1, 1936	Nov. 2, 1936	Dec. 2, 1935	Dec. 1, 1934
Viscose process:				
75 denier (18–30 fils.)	$0.90	$0.90	$0.87	$0.90
100 denier (40 fils.)	.79	.79	.76	.75
150 denier (40 fils.)	.60	.60	.57	.55
Acetate process:				
150 denier	.60	.60	.60	.70
Cupra. process:				
150 denier (112 fils.)	.65	.65	.62	.70
Payon staple 1½, 3 and 5½ denier	.28	.28	Not quoted	Not quoted

Indices of Deliveries*

Statistics**	Year 1936	Year 1935
Month		
November	508	464
October	504	494
September	537	583

* Rayon Organon.
** Exclusive of Acetate. Daily average 1923–1925 = 100.

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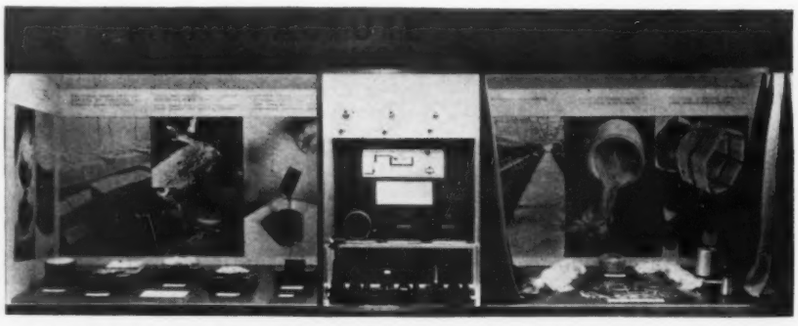
Current Silk Data

Key silk prices and statistics follow:

Prices	Dec. 1, 1936	Nov. 2 1936	Dec. 2, 1935	Dec. 1, 1934
Crack XX 13/15 white 78%	$2.05	$1.82	$2.05	$1.35
Tram, 5thd Japan 85%	2.90	2.53	2.65	2.25
Tram Crack XX 78%	2.65	2.38	2.57	2.00
60s–2, spun silk	2.95	2.95	2.95	2.95

Statistics	Imports	Approx. deliveries	Stocks at warehouses
Nov. 1936	50,814	40,401	40,713
Oct. 1936	43,840	43,093	30,300
Sept. 1936	45,437	45,709	29,533



An exhibit of the manufacture of rayon by the Viscose Co., which is now on display at the New York Museum of Science and Industry at Rockefeller Center. The exhibit includes photo murals, a spinning machine, raw materials and finished fabrics. There is also a continuous film showing in animated diagram form the process by which viscose rayon is made.

Carter to Build Rayon Fabric Mill

Further evidence of the increasing importance of the South in rayon fabric manufacture, was found in the announcement by W. J. Carter and associates of plans for construction of a silk-and-rayon weaving mill at Greensboro, N. C. The mill will represent an investment of $750,000, contract has been let to Chas. W. Angle, Inc., of Greensboro. The establishment will begin operations in spring, and will employ 600 workers on 400 looms.

Mr. Carter, who is executive vice-president of S. Slater & Sons, Webster, Mass., will continue in that post, it is understood. He is reported to have controlling interest in the new enterprise; the firm will shortly be incorporated in North Carolina. Among those associated with him is H. Nelson Slater, president of S. Slater & Sons; the output of the new firm will be sold through J. P. Stevens & Co., which firm also handles the Slater fabrics.

•

Figures Don't Lie!

Further confirmation of the exceptionally strong call for woven rayon fabrics this fall, is offered in the monthly index of deliveries made public Nov. 25 by the National Rayon Weavers Association. October which normally shows a seasonal drop, registers a slight rise instead, with unfilled orders larger and stocks smaller than a month previous. Figures follow:

1934 = 100	*August 1936*	*September 1936*	*October 1936*
Taffetas, Twills, Linings and Other Staples	262	274	276
Dress Goods, Novelties, and Other Fancies	125	111	112
Total	173	167	168

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Industry Notes

Van Horn Resigns—The resignation of Peter Van Horn as president of the National Federation of Textiles became known Dec. 9; he had been on leave of absence since last summer.

Merger Plan Tabled—The National Federation of Textiles, voted last month to table the question of merging with the National Rayon Weavers Association. The decision on the merger was reached at a meeting in New York, G. H. Conze, vice-president, presiding.

Celanese Strike Ends—A strike of 9,000 workers at the Cumberland, Md., plant of the Celanese Corp. of America, which started Nov. 13, was settled Dec. 2, when the company granted a wage raise reported to be about 12½%. The company resumed operations Dec. 4, and expected soon to be up to normal production.

•

And Still They Come!

Suggestions for a new name for staple fiber, in line with the invitation extended by this publication in its Rayon Issue in September, continue to come in.

S. A. Van Hoytema, of the Technische Hoogeschool Mechanische Technologie, Delft, Holland, states that he, working in conjunction with Enka, had decided to promote the terms *"Celvezel"* and *"Celfil"* for the staple and filament fibers respectively.

Leo Soep, of Paris, France, suggests *"Lux"*—or if this meets with opposition since it is a trade name, *"Luxon."*

T. H. Kidd, of the South Atlantic Steamship Line, Atlanta, Ga., suggests "Tween." In answer to query from us, he explains that rayon staple fiber is *"between"* the type of cotton and silk, so he just left off the *"be."* (Believe it or not, we had guessed this in advance.—Ed.)

Max Siegel, of Indianapolis, Ind., suggests *"Linda."* He states that the word 'lind" in German means soft—"soft as air."

G. E. Wormull, of the Viscose Co., New York, suggests *"Fibraynńe"*—or *"Fibray"* —or *"Fibranńe."*

D. G. H. Melton, plant manager of Bonner-Worth Mill of Dominion Woolens & Worsteds Ltd., Peterborough, Ont., offers: *"Rayarn," "Rayspun," "Raymode," "Rayene," "Durayarn," "Fibrene," "Lanoray," "Lanorayon," "Lanorayon."*

George A. Preble, of Lowell, Mass., suggests, for cut rayon, *"Ray-fille"* (girl or child of rayon); and for cut acetate, *"Acefille"* (girl or child of acetate).

Mansfield Lonie, of the Butterick Co., Inc., suggests *"Scoron"*—derived as follows: *"Short Cuts Of RayON."*

Earle L. Milliken, of Hartford, Conn., proposes: *"Vybray," "Delicell," "Belyon," "Vybra," "Cella," "Panyon," "Melyon," "Sella," "Cellure," "Blandray," "Luray."*

In an early issue we are going to publish a complete list of all these suggestions and invite votes from our readers. Watch for it!

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Rayon and Silk Financial

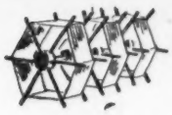
Atmore (Ala.) Silk Mill has been sold to H. C. Rausch, silk-mill operator, who is stated to have connections with New York interests who own a weaving mill at Hattiesburg, Miss.

Belding-Heminway-Corticelli, Inc., New York, N. Y., has disposed of its former Corticelli mill at New London, Conn., to Braunstein-Freres, Inc., New York, affiliated with Standard Products Corp., which will occupy for another branch of manufacture.

Fort Stanwix Textiles, Rome, N. Y., has succeeded **Rome Rayon Corp.**

American Bemberg Corp., New York, paid $10.50 per share on the preferred stock on account of dividends in arrears on Dec. 15.

Hartford Rayon Corp., Rocky Hill, Conn., on Dec. 1, passed into the financial control of a new group representing financial and chemical interests, it was announced by Hamilton Pell, of Pell & Co., brokers, who is a foremost member of the group, on the financial side. The chemical interests are represented by B. R. Armour, president of Heyden Chemical Corp. and also president of American Aniline Products, Inc. Election of Bernard R. Armour, president of Heyden Chemical Co. as president, to succeed John C. Cosseboom, was announced Dec. 8. Gilbert T. Loveridge, general manager, combines this post with that of executive vice-president. Expansion plans include construction of a by-products plant.



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Rayon & Silk Mill News

Albert J. Bartson, Midland Park, N. J., weaver of silk draperies and upholsteries, has opened a branch mill at Charlotte with 40 looms on cotton goods. This corrects the item run in this column last month.

Cedarcliff Silk Mills, Inc., Binghamton, N. Y., have plans nearing completion for one-story mill addition, and will begin superstructure at early date. It will cost close to $50,000, with equipment. Jones & Sewell, Binghamton, are architects.

E. I. duPont de Nemours & Co., Rayon Division, Buffalo, N. Y., has begun construction of large addition to local mill on River Road, reported to cost over $200,000, including equipment.

Tubize Chatillon Corp., New York, N. Y., has begun work for new additions to rayon mill at Rome, Ga. Plant will comprise two main units, three- and one-story, respectively, as well as expansion in power house and other mechanical departments. Entire project will cost about $2,000,000. General erection contract was let recently to the Batson-Cook Co., West Point, Ga. Robert & Co., Inc., Atlanta, Ga., are architects and engineers.

Viscose Co., New York, N. Y., has taken option on tract of about 300 acres of land at Front Royal, Va., as site for proposed new rayon mill.

Allegheny Silk Co., Altoona, Pa., has begun erection of one-story mill addition, 125x240 ft., for which general contract recently was let to J. C. Orr & Son, Altoona, and will equip for considerable increase in present output. Cost is over $85,000 with equipment.

Altoona (Pa.) Silk Corp., Altoona, Pa., recently organized, has arranged for long-term lease on new one-story industrial building to be constructed by the Altoona Chamber of Commerce, for which superstructure will begin at once. Mill will be equipped to give employment to about 300 operatives and is estimated to cost about $75,000, with equipment.

Marietta Silk Co., Columbia, Pa., has installed an H-W Conditioner for conditioning rayon.

W. A. Forsyth Silk Co. Eynon, Pa., has installed an H-W Conditioner for setting twist.

Oscar Nebel Co., Hatboro, Pa., has completed installation of equipment in building recently leased at Winchester, Va., where branch mill will be operated in the future.

Wahneta Silk Co., branch plant at Williamsport, Pa., has been abandoned and machinery and equipment removed to the company's mill in Catasaqua, Pa., where the two units will be combined and more than 1,300 looms operated.

E. I. du Pont de Nemours & Co., Rayon Division, will erect an addition to its Spruance plant at Ampthill, Va., which will increase production 7,000,000 or 8,000,000 lb. of yarn annually. The addition is expected to be completed by Jan. 1, 193, and will employ 500.

British-American Silk Mills, Ltd., Granby, Que., has decided to install 50 additional looms for weaving silk and rayon broad goods. The looms will be installed when a new addition to the main plant has been erected.

TEXTILE WORLD'S

Knit Goods Digest

ONE thing that marks all conferences held under the auspices of the National Association of Hosiery Manufacturers is the careful planning that goes into the agenda. Last month for example, the board of directors, and the executives of allied associations, met to make preparations for the industry-wide conference to be held in February. During the intervening months, the best thought of the industry will be directed toward that event, with the result that its success will be assured.

It is particularly noteworthy that one of the two major objectives of the conference will be decision on a course to be followed with respect to legislative or administrative measures which may be proposed in Washington. Past performance of this branch of textiles promises a constructive, not an obstructive, attitude on this question.

—*Editor.*

Hosiery Industry To Meet Feb. 11-12

Announcement of a Hosiery Industry Conference in New York, the date of which has been set tentatively for Feb. 11-12, 1937, was the highlight of an important meeting of the board of directors of the National Association of Hosiery Manufacturers, held last month in New York. The meeting took on an industry-wide aspect in that representatives of the following associations were present as guests: Full-Fashioned Hosiery Manufacturers of America; Full-Fashioned Hosiery Association, Inc., and the Southern Hosiery Manufacturers Association; the Wool Hosiery Institute, while not represented, expressed interest and a desire to cooperate.

The February conference, which is expected to parallel in importance and numbers present the Code Conference held in July, 1933, will crystallize industry opinion and policy regarding a "new N.R.A."

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Hosiery Union Seeks Wage Raise?

Plans by the American Federation of Hosiery Workers for a drive for higher wages, were reported in process of development last month. Branch One of the federation in Philadelphia, which is the strongest single local, adopted a resolution calling for a national convention of the federation next month. The labor leaders indicated that they would not be interested in renewal of the agreement between the federation and the Full-Fashioned Hosiery Manufacturers of America, unless such agreement provided for higher wages.

•

Hosiery Prices Start Upward

First evidence of the long-awaited increase in hosiery prices was manifest at the end of November when a foremost manufacturer of branded lines announced advances of 15 to 25c. per doz. on a dozen of the company's chief numbers. Especially significant was the company's statement that the new price levels would be effective only for the month of December.

•

Go Slow on Fall Selling!

Various knit goods manufacturers, especially in the underwear and outerwear branches, are booking substantial fall, 1937, business, with only moderate price protection against cost increases. In view of the present upward trend in wages, and the prospect of further cost burden by legislation, extreme caution in advance commitments, as now urged by the trade associations, is advisable. *Go slow on fall selling!*

•

Underwear Prices Rise

In the knitted underwear field prices continued the upward trend which started in October. By the middle of November, various firms had advanced their spring line prices 2½ to 12½c. above the levels of the preceding month. Men's knit athletic shirts have risen from $1.32½ to $1.40, and other lines in proportion.

Demand holds strong both as regards current lines and spring merchandise. At the end of November, distributors were having much difficulty in getting holiday shipment of low and popular-priced rayon underwear. Mills reported that generally demand exceeded supply, and large stores complained that 40% of their Christmas stocks, ordered well ahead, had not been delivered.

•

Outerwear Strong; Swimsuit Prices Up

Outerwear mills entered December in very good position with respect to holiday business. Buying has been stronger than in some years, and spot prices have been moved up slightly. The chief advances, however, are in 1937 summer lines. The 1937 swimsuit prices are definitely on the rise, according to present indications. Leading swimsuit manufacturers have announced advances of from 25c. to $1.00 on their new lines, this rise being much earlier than usual for that division; the advance did not discourage buying and seemed likely to hold.

•

Hosiery Sales Set All-Time Record

Hosiery shipments in October set an all-time record, totalling 12,234,846 doz. pr., according to the National Association of Hosiery Manufacturers. The ten months' total shipments this year stands at 100,800,282 doz. pr. against 92,388,701 for the same period last year, a gain of 9.1%. All divisions excepting woolen goods showed an increase in 1936, the biggest rise being in anklets with 20% and women's seamless excluding wool, 16%. The association states that if current rate of gain is maintained for the two final months the grand total of 1936 shipments will be 122,000,000 doz. prs., or about 5,000,000 above 1929.

•

Northern Mills Urged to Modernize

Confirming reports that his company has completed plans for a $500,000 modernization program, William Meyer, president of Apex Hosiery Co., Philadelphia, last month said the step was prompted by a realization that "Northern mills must have thoroughly modern high-speed equipment to compete with the very modern equipment now operating in the South." The statement by Mr. Meyer, who is a former president of the National Association of Hosiery Manufacturers was interpreted as substantiating the stand taken by Dr. G. W. Taylor, while impartial chairman of the unionized branch. Dr. Taylor held that equipment rather than wages was the basis of the North vs. South competition.

•

Lift Prices, Cut Stocks, Mills Urged

"Raise prices — keep stocks down." This double policy was strongly recommended to the hosiery industry for immediate adoption, in statements issued by the National Association of Hosiery Manufacturers during November. Urging cautious production to equal the seasonal lull of January and February, the association followed this recommendation with a second message emphasizing the need of higher prices to balance the rapid upward trend of costs.

•

Industry Briefs

Underwear Trade Conference—Formal application for a trade conference to consider improving the rules of business practice were filed with the Federal Trade Commission Nov. 17 by the Underwear Institute, New York.

Hosiery Hearing Jan. 12—A hearing on import competition in seamless

cotton hosiery will be held Jan. 12 before the U. S. Tariff Commission at Washington, D. C.

Knitwear Tariff Ruling—The fight of domestic infants' wear knitters for protection against imports was marked by an important victory for home industry this last month when the U. S. Court of Customs and Patent Appeals held that higher tariff rates on such imports must be paid on merchandise up to 6 year size and not to two years as had been claimed.

Mill Trend to Britain—With the aim of developing their British business beyond present limits imposed by tariff, Julius Kayser & Co. and Interwoven Stocking Co. are negotiating for the establishing of mills in Great Britain.

Win Tourney Honors—The seventh annual golf tournament of the Carolina Yarn Association held Oct. 29 and 30, brought first honors to the following: Golf—John Pons, of Morganton (N. C.) Full-Fashioned Hosiery Mills had lowest net score for 36 holes; I. E. Pennington, of Penn Hosiery Mills, Burlington, N. C., had lowest gross score. Skeet shooting—J. N. Weeks, of Hanes Hosiery Mills, Winston-Salem, N. C. Event chairmen: Tournament—Sam Diggle, of Dixie Mercerizing Co., Charlotte, N. C.; entertainment—R. J. Mebane, of American Enka Corp., Asheville, N. C.; prizes—J. P. Rickman, Standard-Coosa-Thatcher Co., Greensboro, N. C.; invitations—Fred Hallenback, Scott & Williams, Inc. Group pictures of the golfers are shown on page 92.

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Knitting Mill News

Cooper-Wells Co., Decatur, Ala., has completed the construction of a $15,000 addition.

Albany (Ga.) Mfg. Co., recently organized by A. Blum, Albany, and associates, has asked bids on general contracts for new one-story knitting mill, 120x210 ft., to be equipped for hosiery production. It will cost over $75,000, with machinery. Charles A. Blatchley, Philadelphia, is consulting engineer.

Crisp Hosiery Mills, Cordele, Ga., recently organized, has arranged for a long-term lease on a building being erected by Crisp County Development Co. General contract, which does not cover heating, air conditioning, etc., is being done by C. M. Guest & Sons, Anderson, S. C. The building, 80x100 ft., will have glass bricks in place of windows and will be air conditioned throughout.

Lucky Stripe Silk Stocking Co., has installed machinery in a new building at Fitzgerald, Ga., which was provided by the local Chamber of Commerce especially for this concern.

American Hosiery Co., New Britain, Conn., has let general contract to William H. Allen, New Britain for alterations and improvements in mill, including a new bleachhouse on first floor of present mill.

New England Knitting Mills., Inc., Worcester, Mass., was damaged when fire swept the Coes industrial building on Nov. 30. Loss was estimated by Philip Cotton, superintendent, as $20,000 for stock and $30,000 for machinery.

Standard Hosiery Mills Co., Alamance, N. C., has purchased six additional full-fashioned hosiery machines at a cost of approximately $60,000.

Winner Hosiery Mills, Inc., Boiling Springs, N. C., are installing a number of additional knitting machines.

Concord (N. C.) Knitting Co., has constructed a two-story addition.

Juvenile Hosiery Mills, Inc., Greensboro, N. C., have begun foundations for two-story addition to mill, 65x106 ft., for which general contract recently was let to C. W. Angle, Inc., Greensboro. Cost is over $50,000, with equipment.

Whisnant Hosiery Mills, Hickory, N. C., have completed an addition, which will almost treble the capacity of the plant. The company also has a finishing department, which is scheduled to be in full operation by Jan. 1.

Mace Mfg. Co., Randleman, N. C., plant, after having been in Randleman for three years, is moving to Brooklyn, N. Y., where the main plant is located.

Sulloway Hosiery Mills, Franklin, N. H., is installing a new 500-hp. electric generator.

Hackettstown (N. J.) Silk Hosiery Co., has acquired property at Reidsville, N. C., and plans early establishment of new mill at that place, with equipment installation for initial capacity of about 500 doz. pairs of full-fashioned hosiery per week. Considerable machinery will be removed from Hackettstown mill to new location. It is proposed to have new plant ready for operation early in 1937.

Perry, (N. Y.) Knitting Co., has completed installation of equipment in the former local Wyckoff mill, and will operate as a branch plant. Facilities have been provided for employment of about 50 persons.

Apex Hosiery Co., Philadelphia, has placed an order for 51 full-fashioned hosiery machines with Textile Machine Works, Reading, Pa., to replace older units.

Windsor Mills, Philadelphia, are establishing a new hosiery mill at Athens, Ga., where building has been acquired. Mill equipment is being removed from Philadelphia to the new location, where operations will be conducted in the future. Entire removal and set-up of machinery at new plant is scheduled for completion early next year.

Nolde & Horst Co., Reading, Pa., have installed a H-W Conditioner for twist setting.

Davenport Hosiery Mills, Inc., Chattanooga, Tenn., has completed an addition doubling the silk mill capacity, according to Kenneth Durham, vice-president.

Border & Beck Hosiery Mills, Kingsport, Tenn., will establish a branch plant at Cranberry, N. C.

Lynchburg (Va.) Hosiery Mills will construct a new unit at a cost of $25,000, exclusive of machinery.

London (Ont.) Hosiery Mills, Ltd., have plans for one-story addition, 45x92 ft., to be equipped primarily as a dyehouse.

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Knitting Financial News

Munsingwear Corp., Minneapolis, Minn., has distributed its holdings of stock in **Wayne Knitting Mills** as a dividend to its stockholders.

Spotlight Hosiery Mill, Inc., Rome, Ga., will begin operations about Jan. 1, with a capacity of 15,000 doz. pairs of circular hosiery each month.

Bear Brand Hosiery Co., Chicago, has sold the plant it vacated at Beaver Dam, Wis., over two years ago to the city of Beaver Dam for $50,000.

Clark Knitting Co., Rutherfordton, N. C., has been organized by Watson Clark and several associates.

Summers Hosiery Mills, Inc., Salisbury, N. C., was recently granted a charter to engage in the manufacture of hosiery and knit goods, with a capital stock of $100,000, with $300 worth of stock subscribed by Mrs. C. H. Summers, C. H. Summers and H. L. Arey, all of Salisbury.

Halifax County Hosiery Mills, Inc., Scotland Neck, N. C., has been organized for the manufacture of hosiery and other textile products. The concern is capitalized at $150,000 with $400 stock subscribed by P. F. Gregory of Halifax, N. C., and H. T. Clark, W. H. McDowell, and Ellis Bryan of Scotland Neck.

Stanfield (N. C.) Hosiery Mills, Inc., will be reorganized.

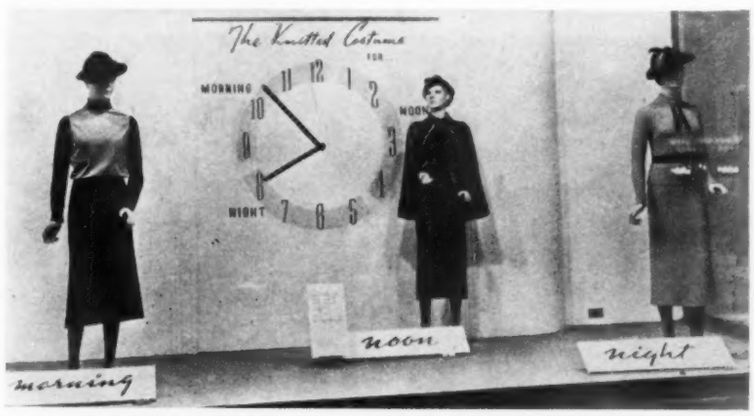
Maple Shade (N. J.) Hosiery Mills, Inc., has been sold at public auction by trustees in bankruptcy, Alexander L. Rogers and Henry Goldstein. Certain equipment, of which there is chattel mortgage, has been reserved by the court for the action of those holding such liens.

Amsterdam (N. Y.) Hosiery Mills has been purchased by **May Hosiery Mills**, Nashville, Tenn.

Balk Knitting Mills, Inc., Brooklyn, N. Y., have been formed with capital of 20 shares of stock by John Balk, 1363 Myrtle Ave., to take over and expand the knitting mill heretofore operated under the name of Mr. Balk.

Abood Knitted Mills, Inc., New York, N. Y., have been formed with capital of $100,000, to manufacture knit goods, and will take over mill of M. Abood, who is principal incorporator and head of new organization.

James Hosiery Mills, Inc., Greenville, Tenn., capitalized at $50,000, has been chartered, with M. C. James, Guy M. James and M. C. James, Jr., as incorporators.



The Knitwear Institute announces that the window display shown above has been awarded first prize of $100 as best in the division for cities of over 100,000, in the Institute's nation-wide window display contest. The display was executed by I. A. Fisher, display manager of Zion's Cooperative Mercantile Institution, Salt Lake City, Utah. Another first prize of $100 went to James J. Butler, of the W. M. Norvell Co., Chillicothe, Ohio, for the best knitwear display in communities of less than 100,000 population.

TEXTILE WORLD'S

Processing Digest

EVERY year in December the "Old Farmer's Almanac" predicts: "Colder weather followed by snow." Every year about this time the cotton finishers take some action which makes us predict: "Higher prices followed by profits."

In the past, we regret to say, the Almanac on several occasions has been more nearly correct in its forecasts than we have been in ours. Last year, for example, the finishers announced a 1½% surcharge, then discontinued it, and—in many cases—refunded what they had already collected. That naturally upset our prediction of a profitable 1936.

As this is being written, the finishers are announcing price advances averaging about 20%. This should cover recent wage increases, higher costs of supplies, and other expense items which have risen, and should insure a reasonable profit for the industry in general.

If the finishers really enjoy doing business at a loss year after year, we suppose there is no Blue Law which will prevent them from so doing. However, our reputation as a prophet has suffered considerably from their unpredictable actions in recent years. Therefore we have a selfish interest in hoping that this time the finishers will decide to keep their charges up where they belong and not upset our forecast for 1937 of: "Higher prices followed by profits."

Editor.

Higher Finishing Prices

With the signs pointing to generally higher prices, most finishers in both the silk-rayon and the cotton divisions had withdrawn their price lists at the start of this month. The price advance was regarded as inevitable, due on the cotton side to an expected wage raise of some 10% and on the silk-rayon side to higher costs generally. Prior to an industry-wide advance in prices, lining finishers, on Nov. 19, raised prices for finishing all-rayon fabrics 1c. per yd.

Screen printers withdrew prices on Dec. 2 and reinstated them on Dec. 7 at advances of 15 to 20%.

Dyers and finishers of wool goods in New England have advanced charges to an average extent of 10%. As most wool goods producers do their own finishing this increase had already been effective through the recent advances in fabric prices.

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Offers Stabilization Plan for Silk and Rayon Finishing Industry

Formation of an industry-wide trade association and an employer-worker council for the silk and rayon dyeing and finishing industry were proposed by Joseph Seyer, president of the Dyers' Institute and president also of Seyer Silk Dyeing and Finishing Co., Haledon, N. J., in a letter last month to Major George L. Berry, Coordinator for Industrial Cooperation, Washington, D. C. The letter was in reply to Major Berry's public invitation to industry to attend the industry conference in Washington this month. Mr. Seyer stressed the need for cooperation and associational unity in the industry and asserted that the first essential to that end was an industry-wide organization, which would work in conjunction with his second proposed body—a national council composed of equal representation of employers and employees.

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New Dyes

E. I. du Pont de Nemours & Co., Inc., announces production in this country of Monastral Fast Blue BS, the new pigment blue, introduced recently in Europe, by Imperial Chemical Industries, Ltd. This product is an insoluble pigment producing extremely brilliant shades of blue of excellent fastness properties. While its chief applications probably will be in other fields, it is expected to find a number of uses in the textile industry.

National Aniline & Chemical Co., Inc., announces the following new products: Alizarine Fast Blue RB, a fast-to-light, neutral-dyeing acid blue giving bright, greenish blue shades on wool and silk; and Milling Yellow XN, an acid dye producing considerably greener tones than Milling Yellow 3G and being readily dischargeable with hydrosulphite.

General Dyestuff Corp. announces the following new products: Katigen Brown RON Conc., a sulphur color yielding full brown shades of good to very good all-round fastness; Rapidogen Red Violet RR, a Rapidogen color yielding red-violet prints, brighter than those obtained with Rapidogen Corinth R; and Indanthren Olive Green BA Paste, a vat color, giving olive-green shades of excellent fastness to light, washing, and chlorine.

Sandoz Chemical Works, Inc., recently announced two new products—an acetate dye for producing light self or combination shades, and a level-dyeing acid color of excellent fastness to light. Due to typographical errors, these products were referred to in our November issue as Artisil Light Blue B1 and A20 Rubinol 3GP; respectively. The correct names are Artisil Light Blue BL and Azo Rubinol 3GP, respectively.

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Scott Resigns Post

Albert L. Scott, who has been president of the National Association of Finishers of Textile Fabrics since 1933, announced his resignation from that office Nov. 11. He is president of Lockwood Greene Engineers. The board of directors on Dec. 9 announced that the office of president would be left open and that Wm. J. Matthews, association counsel, had been elected chairman of the executive committee, a new post, effective Jan. 1.

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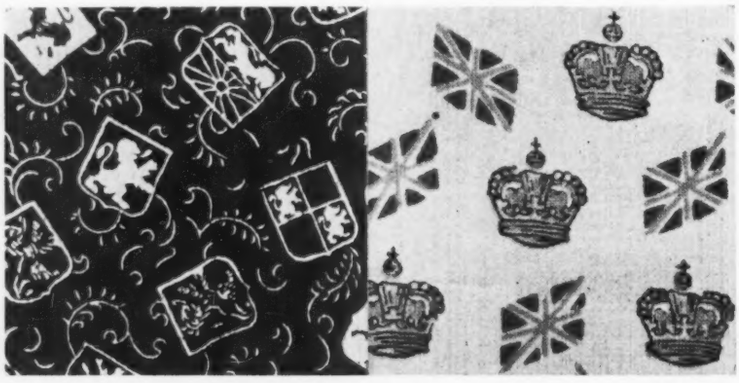
Association Notes

New York Section, A.A.T.C.C., held its November meeting at the Chemists Club, New York, Nov. 20. In addition to a program on "The Story of Wool and



Coronation motifs are being shown in the French midseason collections. Two new colors, the coronation blue and the coronation red dominate many of the new models for the Riviera style and spring wear. Crêpe de Chine, crêpes and light wools are printed with designs of little flags, medallions, badges or orders and even the coronation crown has been used as "dernier cri" to illustrate fabrics, to form buttons, embroidery and trimmings. Above are attractive light wool mousselines of Raymond Castelain.

Mohair," prepared by the Ford Motor Car Co., there was an address by Werner Von Bergen, of Julius Forstmann & Co., on "The Dyeing of Wool and Mohair."

Southeastern Section, A.A.T.C.C., held its fall meeting Nov. 7 at the Piedmont Hotel, Atlanta, Ga., with the following program: Dr. Wm. Stericker, chief chemist, Philadelphia Quartz Co., spoke on "Silicates of Soda and their Textile Uses;" Ralph E. Howell, chemist, Frank G. North Co., Atlanta, Ga., spoke on "Laboratory Methods for Desizing Cotton Materials;" a sound picture, "Underworld of Chemistry," was presented under the auspices of E. I. du Pont de Nemours & Co., Wilmington, Del.

Piedmont Section, A.A.T.C.C., at its recent meeting in Charlotte, N. C., elected Thomas R. Smith, of Albemarle, as chairman to succeed Chester L. Eddy, of Traveler's Rest, S. C., who was elected national councilor. Other officers chosen were: Dr. R. E. Rupp, Lyman, S. C., vice-chairman; Henry Gaede, Charlotte, secretary; and Grady Miller, Hickory, N. C., treasurer. Clyde R. Hoey, governor-elect of North Carolina spoke on the relationship between business and the Roosevelt Administration.

At a recent meeting of the American Section of the Societe de Chemie Industrielle, Alexander H. Kridel described a new system for converting waste flax straw into linen fibers for the textile and paper industries. This process—which was developed by Patrick G. Gibb, now associated with Mr. Kridel—comprises a mechanical treatment of the straw to remove the woody material, followed by a chemical treatment to remove the gums. A more extensive description of the process will appear in an early issue of TEXTILE WORLD.

Dyers in the Paterson, N. J., district have formed a new organization, known as the Dyers' & Finishers' Association of America, which will aim toward stabilization of the industry through cooperation. Rocco Nazzaro, of the Victory Dyeing & Finishing Co., was elected president, and Alexander Paterson has been appointed statutory agent. Other officers are: Samuel Neslin, Kapo Dyeing & Print Works, Inc., vice-president; Fred Russo, Expert Dyeing Co., treasurer; and Alfred Bohny, Modern Central Silk Dyeing & Finishing Co., secretary.

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Coronation Colors Announced

Coronation colors, comprising a group of twelve shades which are fashion-approved for the coronation of King Edward VIII were announced last month by the Textile Color Card Association. The colors, which were presented in a handsomely bound volume, follow: crown ruby, crown sapphire, crown pearl, crown amethyst, royal amethyst, royal yellow sapphire, royal turquoise, imperial gold, regal purple, knight's blue, royal crimson, and English scarlet.

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Industry Briefs

Knapick Heads Union—At a meeting in Paterson, N. J., Nov. 14, the Federation of Dyers, Printers, Finishers and Bleachers of America, elected Joseph Knapick as president to succeed George Baldanzi, who has been elected second vice-president of the United Textile Workers of America. Mr. Knapick had been a member of the federation's executive board, and William Gordon, of New York, was chosen to succeed him in that capacity.

Sanforizing Gains—Total yardage of cotton and linen fabrics Sanforized in the third quarter of 1936 is 60% above the total of the same period in 1935, it is announced by John C. Turrell, director of the Sanforizing Division of Cluett, Peabody & Co. Contacts with licensees, now totaling 59 firms, show the increase to be fairly general, with utility fabrics making the best individual gain.

Water-and-Wind-Proof Ski Suits—The Fabrikoid Division of E. I. du Pont de Nemours & Co., has placed on the market a fabric which is both windproof and waterproof for use in manufacture of ski suits and snow suits. The fabric is a broken twill treated with a compound in which clear latex is used.

Bellmanized Cottons Up 100%—An increase of 100% in the number of converters using Bellmanized cottons in 1936 against last year is announced by Benjamin I. Ward, of Bellman Brook Bleachery.

Wool Research—Investigations at the National Bureau of Standards, by A.A.T.C.C. research associates, Milton Harris and Arthur L. Smith, indicate that an alkali-solubility test is satisfactory for determining the oxidation of wool and is applicable to control work in such processes as bleaching and chlorination. The test is made by treating a weighed sample of wool in a 0.1 N solution of sodium hydroxide at 65° C. for 1 hr., washing, drying, and determining the loss in weight. The greater the solubility, the greater is the degree of oxidation.

Artificially Crinkled Fibers — Treatment of viscose with urea-formaldehyde resin followed by a passage of the fibers between fluted rolls will, according to E.P. 451,102, give a permanent crinkle. The rollers should be hot or heat must be applied to the fibers subsequently to obtain the desired effect.

Three Canadian finishers—Dominion Textile Co., Montreal Cottons, and Canadian Cottons — have recently acquired rights for the joint and exclusive use in Canada of the Neva-Wet water-repellent process on cotton and rayon fabrics.

Color uniformity in fabrics for the automotive trade was the subject of discussion at a meeting of representatives of the automotive and textile industries held recently in New York. Need for research to secure more uniform shades was stressed, and the following committee was appointed to investigate means of conducting such research: V. P. Rumely, Hudson Motor Co; Arthur Besse, president, National Association of Wool Manufacturers; and Franklin W. Hobbs, chairman of the Textile Foundation.

Canadian Cottons, Ltd., Montreal, has been licensed to Sanforize cotton and linen fabrics. This makes a total of 78 licenses which Cluett, Peabody & Co. have granted for use of this process.

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Processing Plant News

Atlantic Print Works, Inc., Paterson, N. J., recently formed with capital of 1,000 shares of stock, no par value, has taken over former local plant of **Disco Dye Works** and will occupy at once for new mill. New company is headed by Milton and Philip Lafkowitz, both of Newark, N. J., and Frank A. Korty, Teaneck, N. J.

Colonial Print Works, Inc., Paterson, N. J., has leased portion of former local mill of Lyons Piece Dye Works, Inc., totaling about 40,000 sq. ft. of floor space, and will occupy at once for new branch mill.

Vermorel Piece Dye Works, Inc., Paterson, N. J., recently organized with capital of 1,000 shares of stock, no par value, has taken over former mill of **Ashley & Bailey Co.**, and will operate a dyeing and finishing plant. New company is headed by Charles K. Vermorel and Louis Andrews, both formerly with United Piece Dye Works.

Cutter Mfg. Co., Rock Hill, S. C., has begun erection of one-story addition to mill, to be equipped primarily as a finishing unit. It will cost $45,000, with machinery.

Holdsworth Co., Ltd., Montreal, Canada, intends to build a textile dyeing and cloth finishing plant in Toronto and equip it at a total estimated cost of $75,000. Building plans have been prepared and the new textile unit will be in operation by March 15.

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Processing Financial

Erie Dyeing & Finishing Co., Paterson, N. J., has been chartered with capital of 2,500 shares of stock, no par value, to operate a dye and finishing mill. New company is represented by David L. Cole, 45 Church St., Paterson.

Paragon Dye Works, Inc., Paterson, N. J., recently formed with capital of 1,000 shares of stock, no par value, plans early operation of a local dyeing and finishing mill. New company is represented by Emmanuel Shavick, 140 Market St., Paterson, attorney.

Ribbon Dyeing Corp., Paterson, N. J., recently organized with capital of 2,500 shares of stock, no par value, plans operation of local dyeing and finishing mill. New company is represented by Ferdinand A. Delaphena, 152 Market St., Paterson, attorney.

Triangle Dyeing & Finishing Co., Paterson, N. J., has been organized with capital of 1,000 shares of stock, no par value, to operate a local mill. New company is represented by Emmanuel Shavick, 140 Market St., Paterson, attorney.

United States Finishing Co., Pawtucket, R. I., which borrowed $1,350,000 from the Reconstruction Finance Corp. in May, 1936, has borrowed an additional $175,000.

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TEXTILE WORLD'S

Engineering Digest

THE air-conditioning industry, as we know it today, celebrated its silver anniversary on Dec. 8. That marked 25 years from the time when the A. S. M. E. officially recognized air conditioning as a true art and science, following a paper on the subject by Willis H. Carrier. Actually, however, installations had been made 10 years prior to that date.

This industry is today hailed — and with justification — as the white hope of the future: the successor of the automobile and the radio as a new field of expansion.

To textile manufacturers, it means more than to most industries. Modern air conditioning had its beginnings in humidification, which probably did as much to transform the processing of textile fibers as any one development. Consequently textile men are particularly sincere in their anniversary congratulations to those who have brought air conditioning to the status it enjoys today.—*Editor.*

A.S.M.E. Annual Meeting

Four features of the annual meeting of the American Society of Mechanical Engineers, held Nov. 30 to Dec. 4, in New York, of particular interest to textile men were the power session, the drying session, the luncheon meeting, of the textile division, and the symposium on corrosion-resisting metals. A paper delivered at the drying session by F. K. Howell, on latest foreign developments in drying staple rayon; and one presented at the textile luncheon by Clifford H. Ramsey, on developments in Sanforizing are abstracted elsewhere in this issue (pages 83 to 85).

Announcement of a new type of oil-fired steam-generating equipment developed jointly by General Electric Co., Babcock & Wilcox Co., and Bailey Meter Co., was made at the power session in a paper presented by E. G. Bailey, A. R. Smith, and P. S. Dickey. In this unit, known as the Steamotive, steam is generated at a high pressure and temperature. In conjunction with a turbine-generator, it makes a completely coordinated power-generating plant for supplying electric power and steam. A description of the new unit will be published in an early issue of TEXTILE WORLD.

Corrosion-resistant steels and irons were discussed by J. H. Critchett, Union Carbide & Carbon Research Laboratories; nickel and nickel-base alloys, by F. L. La Que, International Nickel Co.

E. Cowan and B. Cowan, both of Lake St. John Power & Paper Co., presented a paper on the theory of paper drying, in which they developed formulas for predicting the performance of paper drying machines. Mark Golrick, Dutchess Bleachery, outlined certain of the similarities and differences between drying of paper and textiles, pointed out that can drying of textiles has been largely a rule-of-thumb development, and suggested that the theory offered might—with some modifications—be applied to good advantage to cloth drying.

A. W. Benoit, of Chas. T. Main, Inc., was chosen chairman of the textile division, succeeding Clifford H. Ramsey.

Transmission Council Plans for Future

That the Power Transmission Council, 75 State St., Boston, is now a corporation, with A. P. Homer as president, was announced by J. Edgar Rhoads, of J. E. Rhoads & Sons, during his chairmanship of an open meeting of the Council, Dec. 3, at the Hotel Roosevelt, New York. At this meeting, M. M. Jones, economist of the new corporation, announced that in the future the Council will devote itself to an increasing extent to the assembling and distributing of power-transmission data, to the technical improvement of mechanical transmission equipment and application, to the promotion of economically sound methods of mechanical transmission, and to the education and assistance of industry in machine-drive problems.

Victor A. Hanson, engineer, who has personally supervised the Council's numerous textile-mill studies and is largely responsible for the development of the new Energy Drive for looms (TEXTILE WORLD, November, page 85), is vice-president of the corporation. The board of directors includes many names prominent in the power-transmission industry.

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Jacobus Awarded Acetylene Medal

Dr. David Schenck Jacobus, head of the engineering department of the Babcock & Wilcox Co., was awarded the Morehead Medal for 1935 at the 37th annual convention of the International Acetylene Association held last month in St. Louis. This recognition was given him for outstanding leadership in the formulation of codes and procedures which have made fusion welding acceptable. Dr. Jacobus, a world authority on steam engineering, has served as president of several engineering and technical societies, including the American Society of Mechanical Engineers, the American Society for Refrigerating Engineers and the American Welding Society.

The keynote address of the convention, entitled "An Editor Views American and European Engineering" was presented by Philip W. Swain, editor of *Power*, New York. Other addresses were made by outstanding leaders in the welding industry, and a welding and cutting forum was held one evening. C. O. Epperson, vice-president of National Cylinder Gas Co., Chicago, presided as chairman.

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Air-Conditioning Has 25th Birthday

The 25th anniversary of scientific air conditioning was observed Dec. 8, according to Carrier Corp., Newark, N. J.

Part of table presented by J. H. Critchett at annual meeting of ASME showing pure media and conditions for practically complete corrosion resistance of various low-carbon stainless steels

Media	Conc, per cent	Temp, C	Percentage of alloying elements: 13 Cr	18 Cr	25 Cr	Cr-Mn-Cu 18-8-1	Cr-Ni 18-8	Cr-Ni 25-20	Cr-Ni-Mo-Cu 18-8-2.5-1.5
HNO_3	10	20	x	x	x	x	x	x	x
H_3PO_4	10	20	x	x	x	x	x	x	x
Formic	10	20	x	x	x	x	x	x	x
Acetic	10–50	20	x	x	x	x	x	x	x
Acetic	Glacial	20	x	x	x	x	x	x	x
Tannic	10	100	x	x	x	x	x	x	x
Phenol	10	100	x	x	x	x	x	x	x
Na_2CO_3	10	100	x	x	x	x	x	x	x
Pb acetate	25	100	x	x	x	x	x	x	x
Cr_2SO_4	Sat.	100	x	x	x	x	x	x	x
$ZnCl_2$	1.2 d	20	x	x	x	x	x	x	x
HNO_3	30	20	...	x	x	x	x	x	x
Formic	30	20	...	x	x	x	x	x	x
Citric	10	20	...	x	x	x	x	x	x
Atmospheric	General	...	...	x	x	x	x	x	x
Atmospheric	Under	900	...	x	x	...	...	x	...
HNO_3	10	100	...	x	x	x	x	x	x
HNO_3	Conc.	20	...	x	x	x	x	x	x
Atmospheric	Above	900	...	...	x	...	...	x	...
Furnace gases	Under	900	...	...	x	x	...	x	..
Flue gases	....	....	...	...	...	x	x	x	x
Lactic	1.5	100	...	...	...	x	x	x	x
Oxalic	10	20	...	...	...	x	x	x	x
$FeCl_3$	Low	20	...	...	...	...	...	...	x

which points out that it was on this date in 1911 that Willis H. Carrier, head of Carrier Corp., presented his Rational Psychrometric Formulae before the American Society of Mechanical Engineers.

The eight most important improvements in air-conditioning since 1911, cited by Mr. Carrier in a paper last June before the joint session of the American Society of Heating & Ventilating Engineers and the American Society of Refrigerating Engineers, are as follows:

1. Scientific measure of human comfort.
2. Improved heat transmission surface for heating and cooling.
3. Improved methods of heat removal (refrigeration) including (a) new and improved types of refrigerating machines, and (b) new refrigerant media.
4. Improvements in the methods and apparatus for air distribution and humidity control.
5. Improvements and simplification in the method of dust removal (air filters).
6. Adequate lowering of objectionable sound level ventilation and air-conditioning systems (sound absorbers).
7. Development of reliable low cost unitary cooling and air-conditioning equipment.
8. Extension of the application of air-conditioning to new fields.

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Saco-Lowell Wins Safety Award

Saco-Lowell Shops, Biddeford, Me., has been awarded a safety trophy by the Maine Department of Labor and Industry. This division, leader in the metal group, worked 1,345,879 man-hours with only fifteen accidents in which 405 days were lost. The Saco division of the same company was in second place with 433,722 man-hours and seven accidents in which 122 days were lost.

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Power Conference Extends Activities

The National Power Conference's extended activities are including power engineers from Maine to California. Under the new plans, engineering information relating to power economics, general uses and production will be disseminated to engineering societies, manufacturers of power equipment, and power engineers in utility and industrial work.

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Industry Notes

Duke Power Co., Charlotte, N. C., is spending $3,000,000 in an expansion of its steam-electric plant on the Catawba River, ten miles from Charlotte. Capacity is being increased from 150,000 to 225,000 hp. by the installation of a 75,000 hp. turbo-generator. The company expects to be in a position to practically double its power capacity for industry within the next eighteen months.

A reduction in power rates is announced by Duke Power Co. which will lower costs from 1.225c. per kw. hr. for 50,000 kw. hr. to 1.20c. per kw. hr. The company asserts that it is saving its customers in the Carolinas $1.100,000, this cut being the second during 1936. Reductions during the last four years are said to have resulted in a total saving to customers of nearly $5,000,000. Officials point out that such large savings should tend to attract additional industry to the Carolinas.

The Southern States Industrial Council held its annual meeting last month at New Orleans, and industrial problems related to the South were discussed by business leaders from fourteen States. John E. Edgerton is president of the council.

Clemson College, Clemson, S. C., and **Winthrop College,** Rock Hill, S. C., will be equipped with latest-type sprinkler systems for fire protection, if a 45% grant is secured from PWA. The systems are expected to cost around $160,000.

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Engineering Trade News

Herchel V. Beasley, of International Nickel Co., Inc., addressed the Metropolitan Philadelphia chapter of the American Foundrymen's Association at its Nov. 13 meeting on "Some Trends in Gray-Iron Foundry Practice." The discussion centered around improvement in melting practice made possible by closer control over cupola variables, the increased use of heat treatment in connection with cast iron, the wider application of the alloying principle, etc.

Steel & Tubes, Inc., a subsidiary of Republic Steel Corp., Cleveland, Ohio, announces the following appointments in the sales department, according to W. J. Sampson, Jr., vice-president in charge of sales: Lee M. Hogan, former manager of advertising and sales promotion, has been made district sales manager of the New York district. Irving Whitehouse, former assistant manager, was appointed manager of sales promotion. A. R. Smith, who has been superintendent of the Elyria division, has been promoted to general manager of that division, upon the retirement of A. E. Adams.

Louis Allis Co., Milwaukee, Wis., manufacturers of electric motors, announces that C. J. Fechheimer has joined its engineering staff. For over twenty years, he has been closely associated with the electrical manufacturing industry as designing and research engineer, and is nationally known as an author and lecturer on both electrical and mechanical subjects. His work on self-starting synchronous motors and on heat problems in electrical apparatus are among his better known contributions to the industry.

Republic Steel Corp., Cleveland, Ohio, announces that R. H. Sonneborn has been made assistant manager of sales of the Pipe Division, according to N. J. Clarke, vice-president in charge of sales. Martin I. Shea will continue as the other assistant manager of this division, a position which he has held for the last eight years. Before becoming affiliated with Republic Steel Corp., Mr. Sonneborn was associated with Colorado Fuel and Iron Co., and later with Youngstown Sheet & Tube Co.

Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa., announces that David S. Youngholm was elected vice president of the company at the last meeting of the board of directors. He joined the organization 27 years ago in the engineering department of Westinghouse Lamp Co., and since that time has held increasingly important executive positions. His headquarters will be in New York.

Westinghouse Electric International Co. announces that John W. White, formerly managing director of the Cia. Westinghouse Electric Internacional, S. A., with headquarters at Buenos Aires, Argentine, has been appointed general manager of the Westinghouse Electric International Co. Mr. White has served many years with the export division of Westinghouse in several foreign countries, including Cuba, Japan, and the Argentine. His future headquarters will be 150 Broadway, New York.

Wickwire Spencer Steel Co., New York, has promoted J. W. Horner, of Atlanta, Ga., to southern agent.

Crocker-Wheeler Mfg. Co., Ampere, N. J., manufacturer of electric motors and generators, has made P. W. Worth its North and South Carolina representative. He was with General Electric Co. 28 years, and is a graduate of North Carolina State College.

Flintkote Co., New York, manufacturer of roofing materials, will spend approximately $1,000,000 to construct a felt mill in Los Angeles for its wholly owned subsidiary, **Pioneer-Flintkote Co.**, 5500 S. Alameda St., Los Angeles.

Babcock & Wilcox Tube Co., Beaver Falls, Pa., announces the appointment of W. W. Williams, formerly general sales manager, as general manager of the company, and T. F. Thornton, formerly sales manager of the Detroit office, as general sales manager.

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Engineering Mill News

Chicopee Mfg. Corp., Gainesville, Ga., has let general contract to Davis-Washington Co., Gainesville, for one-story mill addition, 50x100 ft., to be used largely for warehouse service. Robert & Co., Inc., Bona Allen Building, Atlanta, Ga., is architect and engineer.

Pepperell Mfg. Co., Opelika, Ala., has begun construction of new group of 23 dwellings, each averaging about four rooms, for employees at plant. Contract for erection was let recently to Batson-Cook Co., West Point, Ga., to include, as well, a new addition to local school. Robert & Co., Inc., Atlanta, Ga., is architect and engineer.

Groves Thread Co., Gastonia, N. C., has had work under way painting the dwellings of the village.

Pinehurst Silk Mill, Hemp, N. C., have 50 dwellings under construction for the operatives.

Kendall Co., Paw Creek, N. C., plant, is constructing a sewage disposal plant, representing a cost of about $15,000.

Sellers Mfg. Co., Saxapahaw, N. C., is repainting all the houses in the village.

Springs Cotton Mills, Fort Mills, S. C., plant, are erecting several additional homes for the operatives on the Charlotte Highway, near Fort Mill. About 20 of the same type homes have been completed.

Pacific Mills, Lyman, S. C., have awarded contract to Gallivan Construction Co., Greenville, S. C., for improvements in water reservoir dam, including construction of a new section of dam, about 175-ft. long, and other auxiliary water-supply work.

Winnsboro (S. C.) Mills, plant of the United States Rubber Products, Inc., have completed twelve modern apartment houses.

Borden Mills, Inc., Kingsport, Tenn., is constructing a new school building and the old one is being remodeled.

ENGINEERING IN THIS ISSUE

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FREE FOR THE ASKING—

READERS interested in the catalogs and other useful literature reviewed on this page may secure copies by writing to TEXTILE WORLD, 330 West 42d St., New York, N. Y.

Wool Processing

James Hunter Machine Co. Illustrated, spiral-bound catalog containing detailed data on machinery for woolen and worsted preparation and wet finishing. Among the types of equipment described are stock dryers, reciprocating-table-feed squeeze rolls, automatic pit feed, fulling mills, washers, and piece-dye kettles.

Control Instruments

Foxboro Co. Illustrated 28-page bulletin giving review of controller valves of both the throttling and the quick-acting, open-and-shut types, as well as modern controller accessories for extending the practical application of automatic control.

Ammonia

Pennsylvania Salt Mfg. Co. Bulletin containing useful information and charts on aqua and anhydrous ammonia, with particular reference to effective handling, etc.

Mothproofing

Flori Mothproofing Method, Inc. Two illustrated folders covering the company's products and method, together with data on results.

Bobbins and Spools

Terrell Machine Co., Inc. Booklet describing and illustrating the new line of bobbins, spools, and wood specialties now being manufactured by the company.

Cotton Blending, Twisting

Saco-Lowell Shops. October issue of *Saco-Lowell Bulletin* containing articles on a number of subjects, including a new system of blending colors on a one-process picker (described in the New Machinery & Process section of this issue), care of card flats, new wind on twisters giving taper-top bobbins, interesting information on cotton manufacturing in South America, starting new machinery, and the company's drafting research by means of high-speed photography.

Production, Yardage, and Pick Counters

Durant Mfg. Co. Folder outling and illustrating line of rotary counters for spinning and twisting, predetermined yardage meters for printing and reeling, lineal counters, and pick counters. Also two catalog sections—one giving full details on the lineal counter, and the other covering the pick counter.

Rayon Warp Sizing

Charles B. Johnson. November issue of *Rayon Warp Sizing Specialist* containing articles on use of split reeds when using Scotch hook reed and on checking rayon warp sizer.

Bobbin Holders

Eclipse Textile Devices, Inc. Illustrated bulletin describing ball-bearing bobbin holders for ring-spinning and roving frames. Data on holder specifications are also included.

Circuit Breakers

General Electric Co. Folder giving construction details on Type AE-1 air circuit breakers for industrial and central-station auxiliary service.

Humidity Instruments

Julien P. Friez & Sons, Inc. Catalog which contains data on psychrometers and hygrographs.

Fuel Savers

Patterson-Kelley Co., Inc. Illustrated folder covering some of the company's heat-transfer equipment, such as hot-water heaters, fuel-oil heaters, and heat reclaimers.

Variable-Speed Transmissions

Fellows Gear Shaper Co. Illustrated 12-page bulletin containing data on the Graham variable-speed transmission. General description, methods of selection, tables of dimensions, speeds and capacities, and prices are included in the material.

Control Instruments

Brown Instrument Co. Illustrated 72-page catalog covering the complete line of thermometers and pressure gages. A detailed description is given of each instrument. Also broadside giving details of thermometer controllers.

Speed Reducers

Westinghouse Electric & Mfg. Co. Booklet describing single- and double-reduction units of the single, helical-gear type.

Variable-Speed Control

Reeves Pulley Co. Attractive illustrated booklet describing methods employed by twelve nationally known manufacturers in securing speed adjustability in their plants.

Traveling Cleaners

Parks-Cramer Co. October issue of *Parks' Parables* containing article on traveling cleaners and tributes from users.

Engineering Equipment

R. C. Stanhope, Inc. Catalog listing used equipment of various kinds, such as compressors, pumps, generators, motors, etc.

Mixflo Pumps

Worthington Pump & Machinery Corp. Illustrated 8-page bulletin describing the improved Mixflo pumps, which deliver from 1,000 to 225,000 gal. per minute at heads from 5 to 50 ft.

Gate Valves

Kennedy Valve Mfg. Co. Bulletin describing a new line of bronzed-bushed, standard, iron-body, wedge-gate valves and containing large sectional views to illustrate features of design.

TEXTILE WORLD ANALYST

TEXTILE WORLD'S index of textile mill activity shows that the rate during the first 10 months of 1936 was 16% above that for the corresponding period of 1935, and the same percentage above the corresponding period of a "normal" year (1924–31 average.) . . . Profit possibilities continued to broaden in November as prices strengthened with the increased demand.

Textile World's Price Index Numbers

STARTING with January, 1936, TEXTILE WORLD has revised its price index numbers to a 1923-25 base, to correspond with current statistical practices. Those who wish to continue with indices based on July 1, 1914, for chart purposes or otherwise, can secure conversion factors to change the new figures to the old by writing TEXTILE WORLD, Statistical Dept., 1427 Statler Bldg., Boston, Mass. Figures on cotton manufacturers, Aug. 1, 1933 to Jan. 6, 1936 include processing tax.

Date	Cotton Index Numbers: Cotton Yarns	Gray	Colored	Wool Index Numbers: Wool	Tops	Yarns	Cloth	Silk Index: Raw Silk	Rayon Index
1923-25	100	100	100	100	100	100	100	100	100
1930 ave.	50	61	61	72	58	61	72	90	109	46
1931 ave.	32	58	46	59	46	49	59	71	32	32
1932 ave.	24	37	37	60	36	40	52	57	21	28
1933 ave.	39	56	55	50	53	59	62	80	21	26
1934 ave.	61	67	70	62	63	70	75	91	17	25
1935 ave.	60	68	67	69	56	58	70	88	22	24
July 1935	61	68	65	69	56	59	70	89	20	23
Aug. 1935	58	68	66	69	56	59	70	89	23	24
Sept. 1935	55	66	68	69	58	60	70	89	25	24
Oct. 1935	57	68	68	69	60	61	73	92	27	24
Nov. 1935	60	70	69	72	62	65	75	92	27	24
Dec. 1935	60	71	69	72	64	66	76	92	26	24
Jan 1936	48	67	63	68	67	73	75	93	26	24
Feb. 1936	42	62	58	67	72	81	77	93	24	24
Mar. 1936	42	61	57	66	73	81	77	93	23	24
Apr. 1936	43	60	55	64	68	75	76	90	22	24
May 1936	43	57	54	64	67	75	76	90	21	24
June 1936	44	58	57	65	67	75	76	90	20	25
July 1936	48	61	61	70	69	75	75	90	22	26
Aug. 1936	45	62	63	70	70	75	74	90	23	26
Sept. 1936	45	62	63	70	70	75	74	90	22	26
Oct. 1936	45	64	67	71	71	75	74	92	23	26
Nov. 1936	45	65	74	72	78	82	76	100	26	26

LESS OXIDATION, LESS GUMMING

Lower Power Cost

WITH GULFGEM OIL

Six Reasons

why GULFGEM OILS are the world's finest spindle oils

•

1 MINIMUM POWER CONSUMPTION. As an oil oxidizes, viscosity and gum formation increase. More power is required to overcome the increased internal friction. The stability built in GULFGEM OIL by the Aluminum Chloride Process provides an oil with highest resistance to oxidation.

2 TOUGH FILM INSURES MINIMUM WEAR. Because of the advanced methods employed in the manufacture of GULFGEM OIL, it provides a tough film which insures efficient lubrication over a long period of time. Thus, spindle wear is reduced to a minimum.

3 MINIMUM ENDS DOWN. Maximum stability with minimum change in viscosity—either from temperature variation or from oxidation—insures constant load and smooth operation. The result is fewer breaks and ends down.

4 LOWEST OIL CONSUMPTION. Because of the unparalleled stability of GULFGEM OIL, it can be used over long periods of time with minimum deterioration. Thus, long life and a low rate of consumption are assured.

5 MAXIMUM INTERVALS BETWEEN SPINDLE BASE CLEANING. If an oil oxidizes and gums at a rapid rate, spindles must be cleaned and lubricated at frequent intervals. The stability of GULFGEM OIL greatly reduces the frequency of shut-downs for this purpose.

6 LOWER PRODUCTION COST. Less frequent need for oil changes, time saved by fewer shut-downs, lower maintenance expense and lower power consumption reflect substantial savings in total operating costs.

Many Mills Report Over-all Operating Costs Reduced With This Improved Spindle Lubricant in Service

LEADING mill operators have established this fact: Over-all operating costs usually have a direct relationship to the efficiency of spindle lubrication. With Gulfgem Oil in service, many mills are reporting the lowest operating costs in their experience.

Because Gulfgem Oil is refined by the ALCHLOR Process, it has highest resistance to oxidation and gumming. Friction drag in spindles—from these causes—is minimized, and power consumption is kept at lowest levels possible.

If you are not using Gulfgem Oil, talk to a Gulf representative about the possibility of effecting economies in power and maintenance—as well as improving plant production—through the use of this high quality spindle lubricant.

GULF OIL CORPORATION—GULF REFINING COMPANY

GENERAL OFFICES, GULF BUILDING, PITTSBURGH, PA.

Consumer Approval for

TRANSPARENT WRAP

Speeds Production at Faster Clip

Mr. W. C. Jackson, Superintendent of Lowell Bleachery South (Georgia Kincaid Mills), writes

"WHY I APPROVE 'CELLOPHANE' WRAPPED TOWELS"

Mr. Jackson writes from Griffin, Georgia:

"I have often wondered why so many consumers sent their towels to the laundry before using. But when one considers that the average towel is pawed over in the retail store for days, perhaps weeks, before it reaches the ultimate consumer, one must commend the housewife for her wise precaution.

"I favor putting towels in Cellophane transparent wrapping because they reach the consumer just as they left the finishing plant. *This means consumer approval.* What gravity is to the river which broadens and deepens as it moves to the sea, consumer approval is to production. That's why I'm so strongly in favor of Cellophane wrapped towels."

PACKAGE INFORMATION

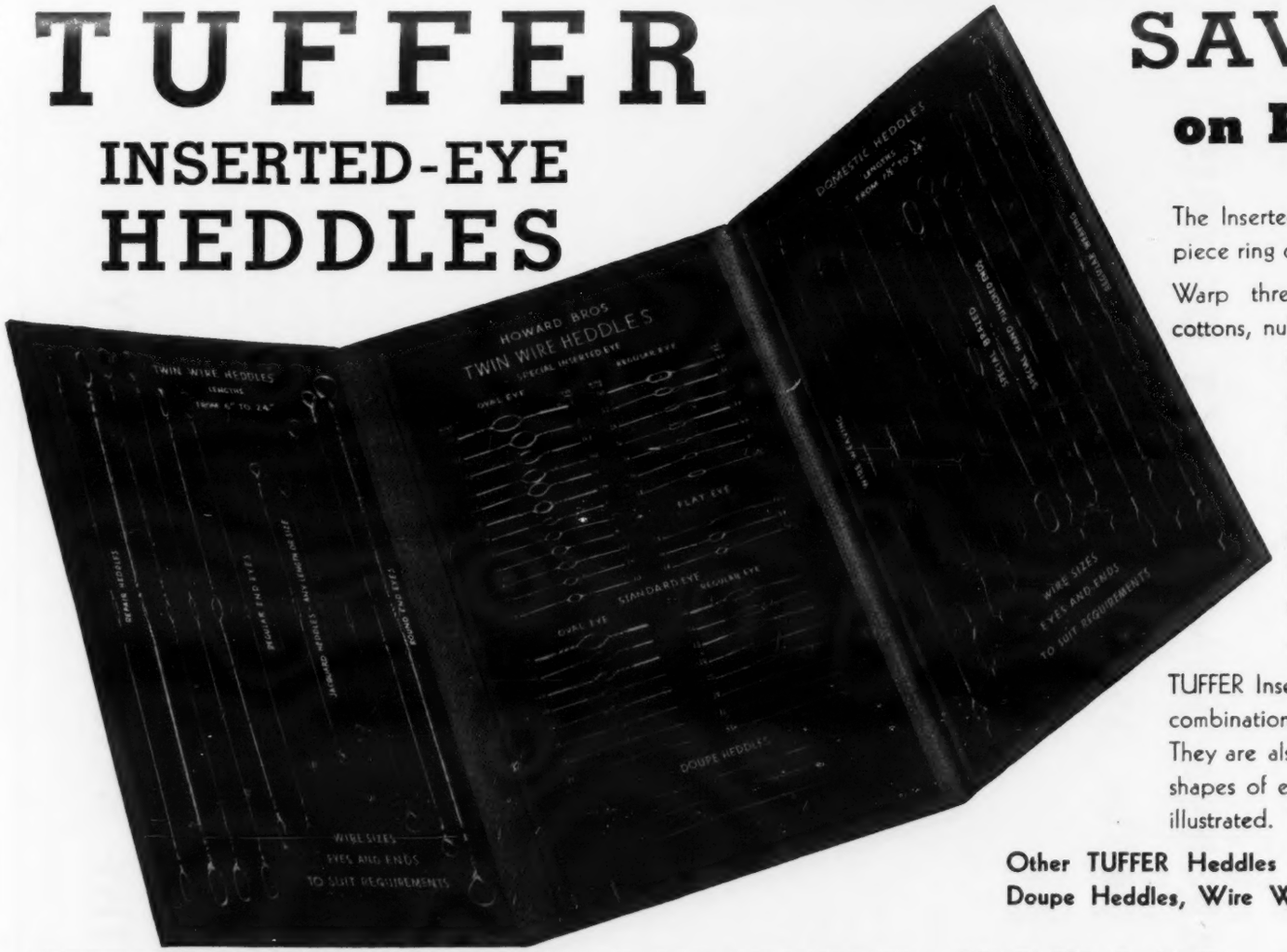
Our Field Representatives are qualified to help with suggestions about efficient production line methods in packaging. E. I. du Pont de Nemours & Co., Inc., "Cellophane" Division, 350 Fifth Avenue, New York City.

Cellophane
TRADE MARK

"Cellophane" is the registered trade-mark of E. I. du Pont de Nemours & Co., Inc.

DU PONT

TUFFER
INSERTED-EYE HEDDLES



SAVE·WEAR
on Heddle and Warp

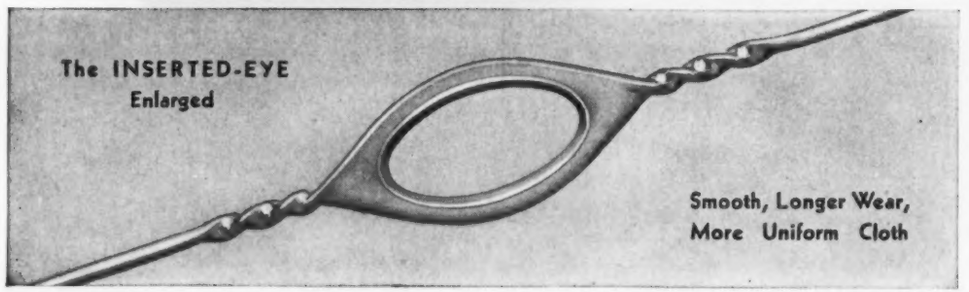
The Inserted-Eye—exclusive with Howard Bros.—is a one-piece ring of metal inserted in TUFFER Twin Wire Heddles.

Warp threads—particularly heavier woolens, worsteds, cottons, nub and slub yarns slide through smoothly without breakage, and the Inserted-Eye does not wear and chafe them. There are less broken ends, less seconds, and more uniform cloth.

Boss Weavers tell us they use less Repair Heddles when TUFFER Inserted-Eye Heddles are on the harnesses. In the hundreds of mills where TUFFER Inserted-Eye Heddles are being used constantly, they are always re-ordered, and actually show a nice saving in time and money.

TUFFER Inserted-Eye Heddles can be made in any size or combination of center and end eyes for your particular work. They are also available for quick delivery in many sizes and shapes of eyes and ends as well as several sizes of wire as illustrated. Write for samples.

Other TUFFER Heddles are Repair Heddles, Jacquard Heddles, Doupe Heddles, Wire Weaving Heddles and Domestic Heddles.



HOWARD BROS. MFG. CO.

HOME OFFICE AND FACTORY: **WORCESTER, MASS.**

Southern Plant: 244 Forsythe St., Atlanta **Branch Offices:** Philadelphia, Dallas

Products: Card Clothing for Woolen, Worsted, Cotton, Asbestos, and Silk Cards—Napper Clothing, Brush Clothing, Strickles, Emery Fillets, Top Flats Recovered and extra sets loaned at all plants—Lickerins and Garnett Cylinders from 4 to 30 inches and Metallic Card Breasts Rewired at Southern Plant—Midgley Patented Hand Stripping Cards, Howard's Special Hand Stripping Cards and Inserted-Eye and Regular Wire Heddles

Who can foresee

THE FAR REACHING EFFECT OF THIS NEW DEVELOPMENT?

EVERY decade or so a revolutionary engineering idea is born that completely changes accepted theories and practices. An idea that makes long established procedures obsolete and wasteful; that sets new standards for cost and product uniformity. A development of this fundamental importance has now been successfully introduced in the field of full automatic control of production processes.

For years past industry has used devices and instruments for regulating each separate step in a production cycle. But the coordination of these steps in their relation to one another, which is so essential to consistently uniform results, has been largely dependent upon the experience, judgment and skill of the individual in charge. Any error in judgment, any oversight, any momentary carelessness is sure to be reflected in a defective product.

This element of chance, ever present where supervision is subject to the uncertainties of manual manipulations, is now, for the first time, definitely eliminated by Bristol's System of Coordinated Process Control. A new trend in industry, this system automatically operates under plant conditions a whole industrial process and thereby facilitates production and insures a uniform product. It is extremely flexible—being applicable in an almost infinite variety of combinations to a great diversification of processes and industries.

The superior accuracy and economy of Bristol's System of Coordinated Process Control are being demonstrated in many plants, including those where production processes formerly were conducted and controlled by the best methods and highest standards previously known.

For example, one plant reports that "Bristol's System of Coordinated Process Control increased production 100% without additional labor or working overtime."

Another says "With the plant operating at its rated capacity . . . the net profit will be sufficient to pay for the complete installation in considerably less than one year."

A third finds "Tensile strength (of product) was increased 17%."

From another user—"The distinctive feature of this plant is completely automatic operation and control. The attendant starts up the apparatus at the beginning of the day and turns it off at the end of the shift in the evening. During the operating period—no attendance is required."

According to still another user, Bristol's System of Coordinated Process Control helps shorten the time of one operation from 168 hours to a half hour! . . . . And so it goes!

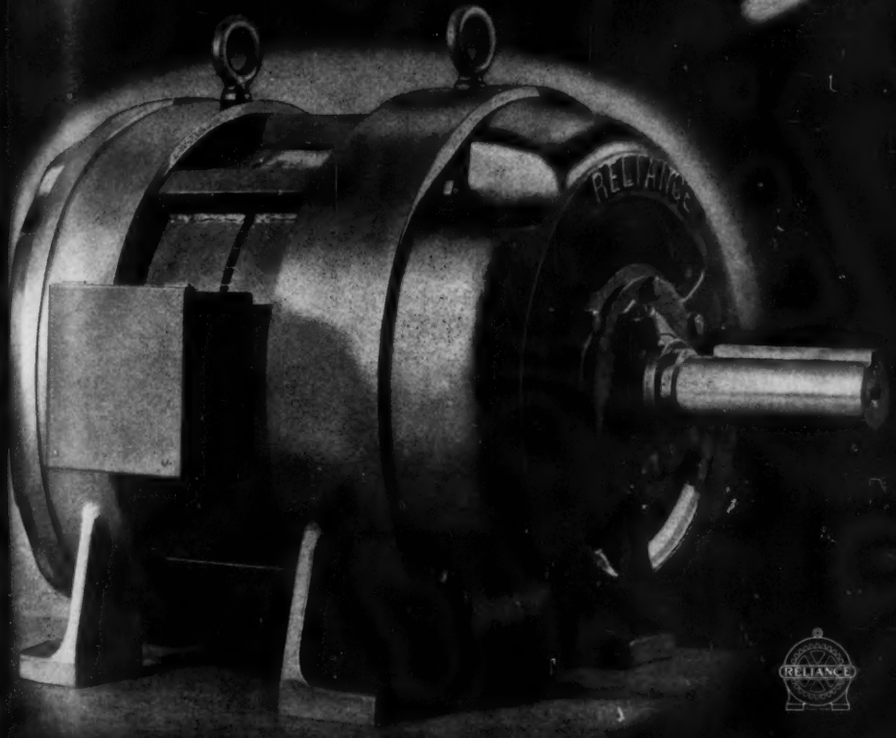
Every business executive, every engineer, faced with the desire or the need to maintain the highest degree of uniformity in order to meet today's exacting product specifications, should be thoroughly informed on this new development, especially as it applies to his own business. This is easily done.

Write for our illustrated descriptive Bulletin No. 460-T "Bristol's System of Coordinated Process Control". Or, if you desire, we will be glad to have one of our engineers discuss your particular production problems with you.

THE BRISTOL COMPANY

20 Bridge St., Waterbury, Conn. Branch Offices: Akron, Birmingham, Boston, Chicago, Detroit, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, Seattle, San Francisco. Canada: The Bristol Company of Canada, Ltd., Toronto, Ontario. England: Bristol's Instrument Co., Limited, London, N.W. 10

STEEL FOR STRENGTH



Squirrel-cage Reliance Induction Motor with Ball Bearings
(Type "AA", Open-slot Frames 444—585)

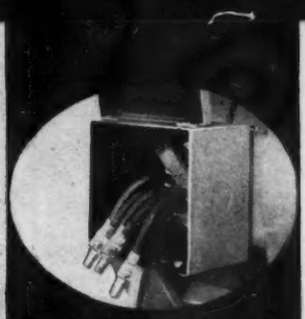
STRENGTH INDEED! An all-steel frame to start with, as essential to a motor as good, healthy bone structure to the body. Supplemented by husky bearing brackets, shafts, bearings and other "organs". Altogether, a rugged, long-lived unit of equipment that cares not how *heavy* your heavy duty service may be. That's the Reliance Type "AA" Motor all over . . . An organization committed to lengthening motor life by incorporating every endurance feature. An adequate, trained force ready to hop on your job personally—and with dispatch . . . Weigh these features when considering sources of supply.

RELIANCE ELECTRIC & ENGINEERING COMPANY

1088 IVANHOE ROAD CLEVELAND, OHIO

Branches: Boston, Buffalo, Chicago, Cincinnati, Detroit, New York, Philadelphia, Pittsburgh, Greenville, (S. C.), Birmingham. *Representatives in other principal cities*

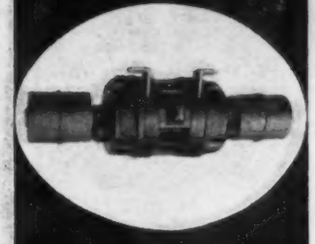
RELIANCE A-C D-C MOTORS



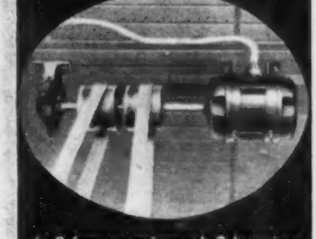
There's a lot of room for making connections in the conduit outlet box. Conduit can be brought in from the top, bottom or either side.

The wrenches commonly used for maintenance work will reach all bolt heads.

The bottoms of the cast-steel feet are finished and base holes are jig-drilled.



Motor for 4-frame drive for ceiling mounting. Double shaft extension, double pulleys, ring-oiling sleeve bearings.



A 2-frame universal 3-bearing drive.

Burroughs

PLAN YOUR PAYROLL ACCOUNTING NOW

to obtain the information required by the

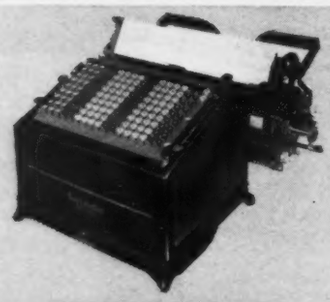
SOCIAL SECURITY ACT

Many employers are finding in recent Burroughs developments a simple solution to accounting problems set up by the Federal Social Security Act. Many have found that the exceptional speed, ease and economy of new Burroughs machines make it possible actually to lower accounting costs and still have the additional information required.

Investigate. Let a Burroughs representative assist you in meeting your payroll problems now, so that you will be prepared to furnish the information required by the Act when it becomes effective the first of the year.

BURROUGHS TYPEWRITER ACCOUNTING MACHINE

Writes check (or pay envelope), earnings record, employee's statement and payroll summary in one operation. Column selection automatically controlled. All totals accumulated. Models to handle every accounting job.

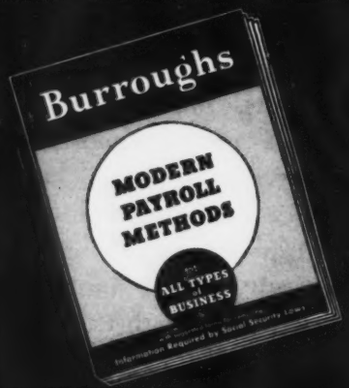


BURROUGHS AUTOMATIC PAYROLL MACHINE

Writes check (or pay envelope), employee's earnings statement, earnings record and payroll summary in one operation. Accumulates all necessary totals. Many models for payroll work as well as for other accounting jobs.

THIS NEW FOLDER MAY HELP YOU

Burroughs has just produced an interesting descriptive folder illustrating complete payroll accounting methods, with typical forms for maintaining the information required by the Social Security Act. The forms show representative entries and suitable column headings. You may have this folder without charge simply by mailing the coupon.



MAIL THIS COUPON!

BURROUGHS DESK BOOKKEEPING MACHINE

Posts earnings records, automatically prints dates in proper columns, automatically subtracts deductions—calculates net pay. Can also be used as a fast adding-subtracting machine for all kinds of accounting work. Low prices.

BURROUGHS CHECK-WRITING TYPEWRITER

Writes payroll checks in units or in strips. Payroll summary completed in same operation. Fast and easy insertion and removal of checks. Can also be used for correspondence and general typing. Electric carriage operation.

BURROUGHS ADDING MACHINE COMPANY, 6771 Second Boulevard, Detroit, Michigan

Send me the new folder, "Modern Payroll Methods"—which includes illustrations of forms for compiling figures required by the Federal Social Security Act.

Name_____ Type of business_____

Address_____

Wherever the Fabric or Solution comes in contact with a surface specify

ALLEGHENY METAL

It's logical—it's time tried—it's permanently profitable . . . used and preferred by leading textile manufacturers to insure true colors, control corrosion, avoid contamination, provide sanitation, resist abrasion and physical damage to fabrics of all kinds.

Allegheny Metal in the textile industry is the result of the cooperation of the textile chemist with Allegheny metallurgists . . . made to meet extremely diversified conditions peculiar to the textile industry.

Allegheny Metal enters into the manufacture of everything from the world's largest dye kettles to small perforated tubes, industrial buckets and cloth cutting tables incident to modern textile mill operation—truly the metal universal.

The benefit of our experience in meeting the corrosion and heat resisting equipment problems of the textile industry is yours for the asking. Our new bulletin "Allegheny Metal in the Textile Industry" will be gladly sent on request.

ALLEGHENY STEEL COMPANY

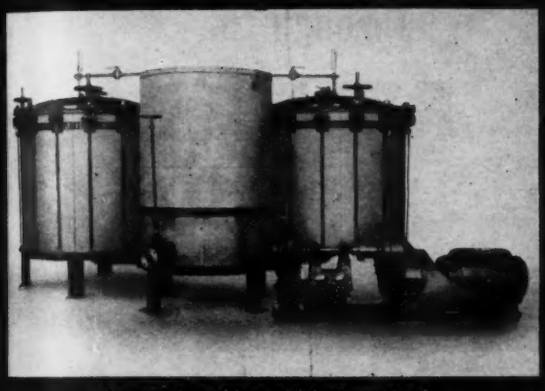
BRACKENRIDGE, PA.

Sales Offices and Warehouse Stocks in the Principal Cities

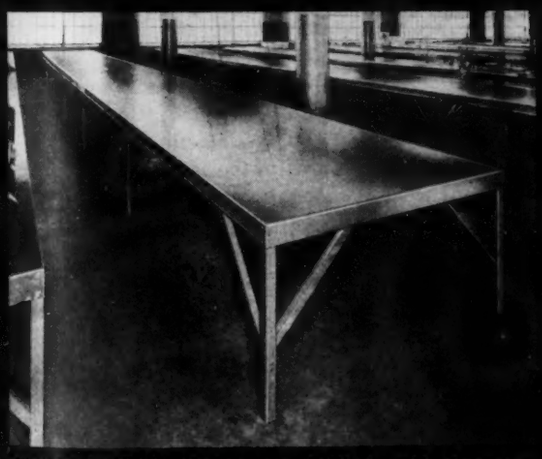
Warehouse Stocks are carried by JOS. T. RYERSON & SON, INC. WAREHOUSES
Union Hardware & Metal Co., Los Angeles . . . American Brass & Copper Co., San Francisco—Oakland

ALLEGHENY PRODUCTS: SHEETS FOR AUTOMOBILE BODIES, METALLIC FURNITURE, DEEP DRAWING—ALLEGHENY METAL—ALLEGHENY STAINLESS STEELS—ELECTRICAL SHEETS—STEEL CASTINGS—SEAMLESS TUBING—BOILER TUBES—PIPE

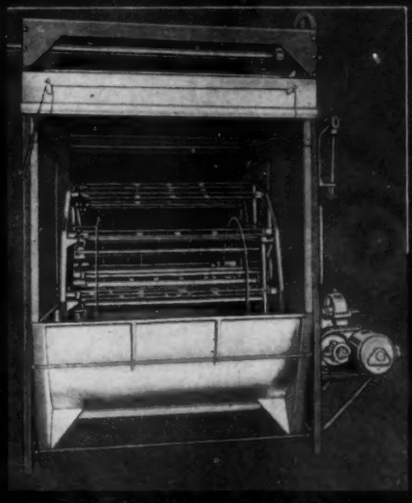
(Allegheny Metal is licensed under Chemical Foundation patents Nos. 1,316,817 and 1,339,378)



Raw stock machines of Allegheny Metal



Cloth Cutting Tables of mirror smooth Allegheny Metal prevent damage to fabrics.



(Above) Allegheny Metal Picker

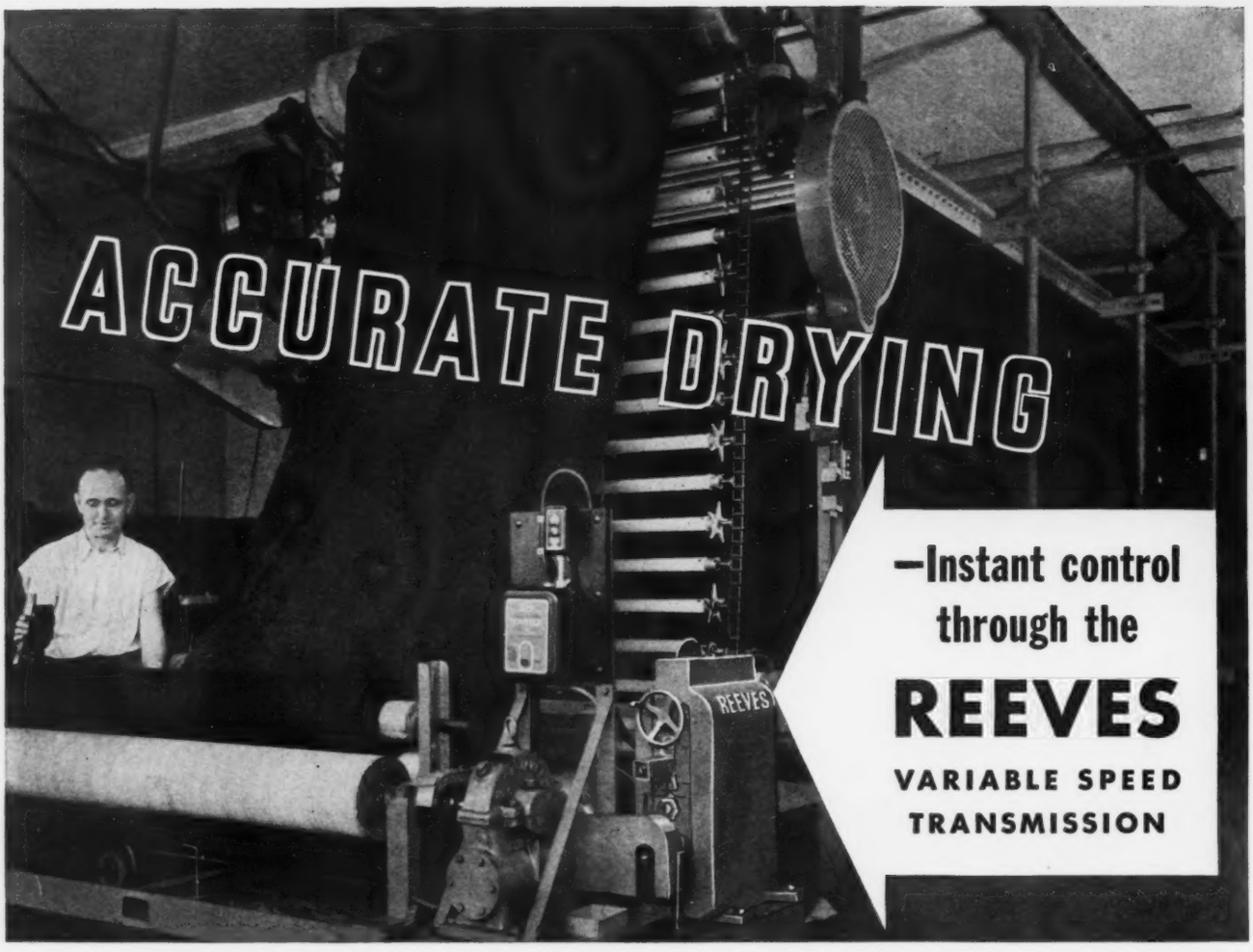
(Below) Durable Buckets and Containers of Allegheny Metal are always easy to clean and keep clean.

Tubing of every size and description, both plain and perforated, is available in Allegheny Metal.

ALLEGHENY METAL

The time-tested stainless steel

Allegheny METAL



Pictured above is a John Waldron Dryer at the plant of Howard Clothes, Inc., Brooklyn, N. Y. This dryer is used for pre-shrinking and for handling wet woolens. It is driven through a REEVES *enclosed, vertical design Transmission and a speed reducer, which provide any speed on the wind-up roll from 15.5 r. p. m. to 46.5 r. p. m.*

* * *

THERE is no guesswork about the timing operation of this dryer. It has the dependable, accurate, split-second speed control obtainable only through the *time-tested* REEVES Variable Speed Transmission.

Cloth is handled at exactly the proper speed—or timing—needed to secure the shrinkage desired and to insure synchronization with related processes. Merely by turning a convenient handwheel—and without interrupting production—the speed of the wind-up roll is increased or decreased to compensate *accurately* for different weights of cloth, widths, moisture content and other variables.

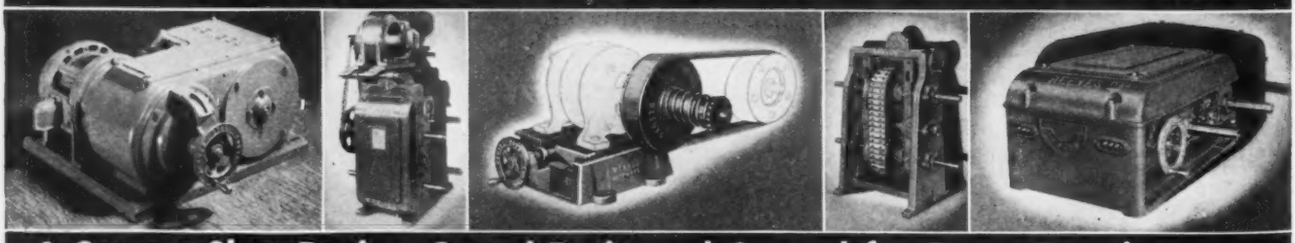
It is easy to see why the REEVES Transmission which provides this *sensitive* speed adjustability to any machine it regulates, is so widely used in the textile industry—for smoother, faster, more uniform production on beamers, warpers, slashers, tenter frames, dry cans, extractors, calenders, mercerizers, inspection tables—in fact on nearly any driven machine used in wool, cotton, silk and rayon preparation and finishing. With Automatic Control, the REEVES synchronizes machines perfectly, maintaining absolutely uniform tension on goods being processed or wound.

Most leading manufacturers of textile machinery now supply REEVES Speed Control as standard equipment. But it is easily applied to machines in service. Experienced REEVES engineers are at your service to assist you with any application. FREE copy of 112-page Speed Control Handbook W-36 is yours for the asking.

REEVES PULLEY CO., COLUMBUS, INDIANA

Originators of the Variable Speed Transmission and Recognized Leaders in Speed Control Engineering.

REEVES BUILDS A COMPLETE LINE OF SPEED CONTROL EQUIPMENT



A Correct Size, Design, Speed Ratio and Control for Every Requirement

OPEN WINDOWS are FALSE FRIENDS

Be warned about spinning and weaving room windows. Pretending to perform a useful service they actually waste your money. For when these windows are opened they lower humidity, cause spotty conditions, ends-down, seconds and high costs. They are false friends.

The Parks Automatic Airchanger, on the other hand, is a friend you can trust to improve production and lower costs. It has *proved* itself. By a patented feature, the system ties in the humidifiers with an automatically controlled air change and provides maximum cooling with *constant humidity,* uniformly distributed. It helps to maintain quality and quantity up to highest standards, makes working conditions more comfortable—winter and summer.

The Parks Automatic Airchanger is designed to utilize and supplement your existing system. No adequate humidifier equipment needs to be scrapped. And the reasonable investment required is soon returned in savings. Send for further information. The coupon below will bring it to your desk—without obligating you at all.

PARKS-CRAMER CO., FITCHBURG, MASS . . . CHARLOTTE, N. C.

PARKS *Certified* **CLIMATE**

ACMA

Gentlemen: Please send me Bulletin 235 on the Parks Automatic Airchanger ☐ You may have an engineer call ☐ (Please check)

Name .....

Company .....

Address .....

City ..... *State* .....

3269

SPECIFY —

RHOADS TANNATE-ROCKWOOD DRIVES *for* VENTILATING *and* AIR CONDITIONING

RHOADS TANNATE

In Tannate Belts pliability, strength, grip and durability **are combined** in an unusual degree.

FOR fans, pumps or other short-center drives there is probably no prime-mover unit more efficient than a Tannate-Rockwood short-center drive. It saves floor space, seldom needs adjustment or other maintenance care and lasts longer under full load or overload conditions than either oak or V-Belt installations.

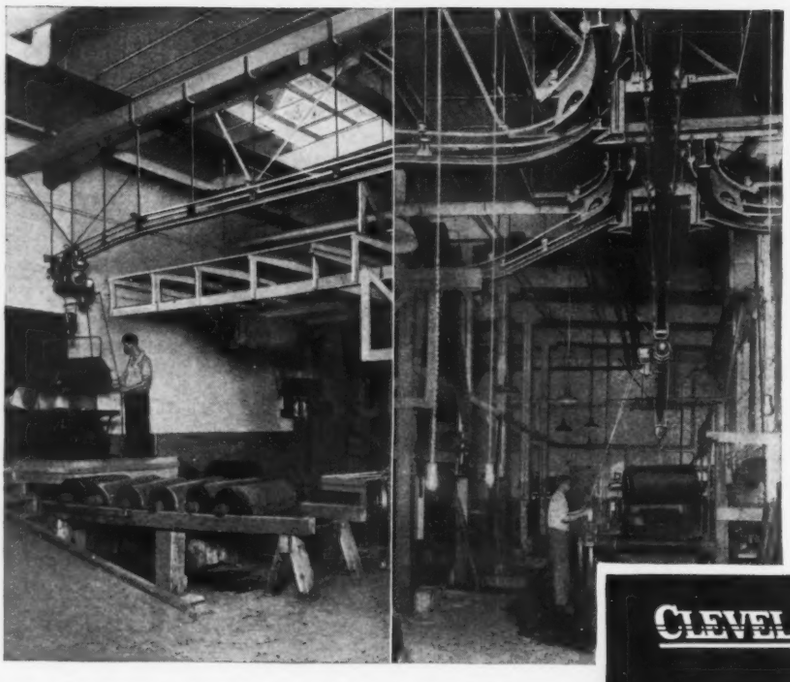
The Tannate-Rockwood unit consists of a motor mounted on a Rockwood pivoted motor base and belted with a Rhoads Tannate Leather Belt. The high efficiency of this combination is largely due to the outstanding qualities of the Tannate Belt.

Compared with other makes, Tannate Belt is usually much more durable at hard service with far greater overload capacity and a dependability seldom found in oak or multiple V-Belts.

SAVE BY MODERN GROUP DRIVES

J. E. RHOADS & SONS
PHILADELPHIA. 35 N. SIXTH ST.
NEW YORK, CHICAGO, ATLANTA, CLEVELAND, WILMINGTON, DEL.

OVERHEAD MATERIALS HANDLING



In this dyeing and printing plant damage to product is avoided, production speeded, rehandlings eliminated by Cleveland Tramrail.

CLEVELAND TRAMRAIL for all handlings in the Textile Industry.

Bales — Cases — Rolls — Chemicals — Warp Beam — Warp Spools — Filler Tubes — Roving Cans

Dyeing of Skeins — Spools — Piece Goods

Consult your 'phone directory under Cleveland Tramrail

CLEVELAND TRAMRAIL

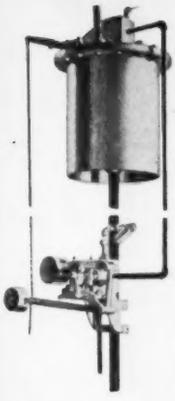
DIVISION OF
THE CLEVELAND CRANE & ENGINEERING CO.
WICKLIFFE OHIO

MOREHEAD does it *Best!*

Morehead BACK-TO-BOILER SYSTEM

Provides quick, thorough drainage of steam-heated apparatus . . . automatic return of all condensate to boilers at original high temperatures. Lowers maintenance cost, speeds production, assures substantial savings in steam and fuel.

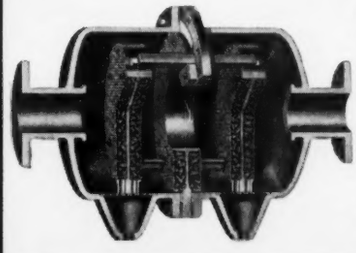
Morehead MIDGET BOILER FEEDER



Amazing new direct pressure boiler feeder for boilers up to 10 h.p. —operates on boiler pressure steam up to 125 pounds. "Remote Control" feature keeps all of the valve mechanism easily accessible from the floor. No floats, no tilting, no adjustments, no outside power necessary. Easy to install . . . no maintenance expense.

Morehead EXHAUSTEAM PURIFIER

Combines all steam-cleansing principles in a single, compact unit, assuring *complete* purification. Delivers clean, dry exhaust steam that may be safely substituted for live steam for heating, drying, cooking and processing at a sharp reduction in fuel costs. Also yields a pure, distilled, soft condensate ideal for boiler feeding and other purposes at additional savings.



Morehead MAKE-UP WATER REGULATOR

Automatically provides make-up water for small boilers—requires no attention . . . no maintenance expense. Simple design and construction assure trouble-free performance. Safe—prevents flooding or scorching of boiler. The last word in convenience and efficiency.

Morehead products are the result of more than forty years of practical experience in the steam specialty field. Thousands of plant owners all over the world are enjoying the benefits and profits of Morehead equipment. Take the first important step toward greater efficiency and more profit in *your* plant . . . check and mail the coupon TODAY!

MOREHEAD MANUFACTURING CO.

DETROIT, MICHIGAN

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MOREHEAD MANUFACTURING COMPANY
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I want to cut fuel costs, increase efficiency, show greater profit. Without obligation, mail me details on units checked below.

☐ Back-to-Boiler System ☐ Midget Boiler Feeder

☐ Exhausteam Purifier ☐ Make-Up Water Regulator

Name _____

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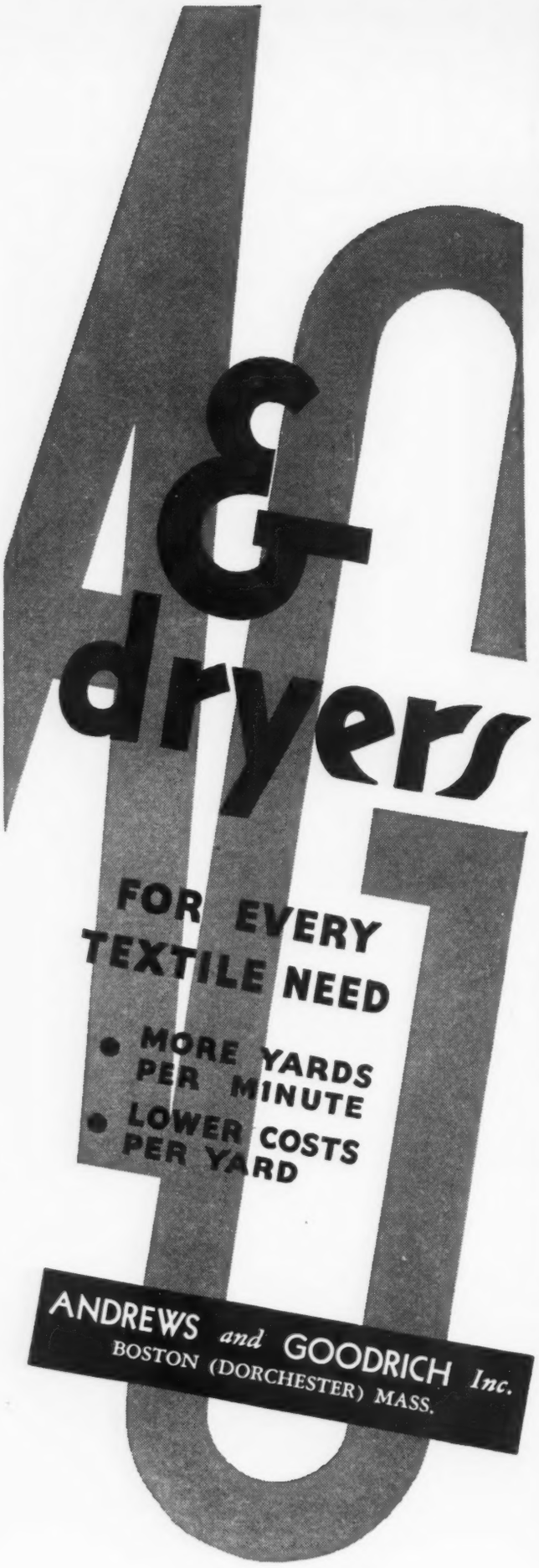
City _____ State _____



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Ball and Roller Bearings
Builders of
Textile Machines Equipped with Ball or Roller Bearings
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TRADE MARK REGISTERED
NON-FLUID OIL
IN U.S. PAT OFFICE & FOREIGN COUNTRIES

Because their own tests proved that this modern lubricant guaranteed economical operation and insured long, useful life.

Write today for free testing sample and bulletin, "Lubrication of Ball and Roller Bearings."

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MODERN TEXTILE LUBRICANT

Better Lubrication at Less Cost per Month

Thirty-third Annual

KNITTING ARTS EXHIBITION

"THE MARKET PLACE OF THE KNIT GOODS TRADE"

The Commercial Museum, Philadelphia, Pa.

UNDER THE AUSPICES

NATIONAL ASSOCIATION OF HOSIERY MANUFACTURERS and UNDERWEAR INSTITUTE

APRIL 19-20-21-22-23, 1937

Each year the Commercial Museum is transformed into a vast market place where buyers congregate from all parts of the United States and Canada. Exhibitors present these buyers with instructive, educational, profitable and business-getting displays of every conceivable variety of equipment, product or service used in the thousands of mills and factories represented.

REPEATING EXHIBITORS ARE A TEST OF RESULTS

Established as a tried-and-true profit creating institution for many years, the Knitting Arts Exhibition boasts of an annual average of 93% of its exhibitors who repeat year after year. Of the number who do not repeat, at least half exhibit in alternate years. Rarely are exhibitors absent more than one year in succession.

The faith of these repeating exhibitors, together with the many new firms that are attracted each year by the far-reaching results obtained, accounts for the continual growth that has been shown by this efficient, business-building Exhibition.

HERE'S THE BRIDGE TO REACH FROM YOUR PRODUCTS TO THE CUSTOMER'S DOLLAR

This Exhibition centralizes the knit goods trade. It is a complete factory, under one roof, where purchasing agents and mill executives can intelligently gather information and data on improvements and new devices. The convention, meetings, displays and worthwhile ideas assure a buying attendance. Increased sales, better business and an atmosphere of well being in the trade are the results for exhibiting manufacturers.

To YOU, with products to sell, an exhibit at this Exhibition presents a remarkable sales opportunity. There is no substitute for personal contact selling. Leading manufacturers WILL be there. You cannot afford to stay away.

The price of a space 100 square feet is only $150, and this includes booth complete with backwall, side partitions, desk, desk chair, Bentwood chairs, Crex rug, hat tree and regulation booth sign. Where electricity and steam are necessary, these are also included.

The better locations are going fast. It will be wise to apply at once to:

KNITTING ARTS EXHIBITION

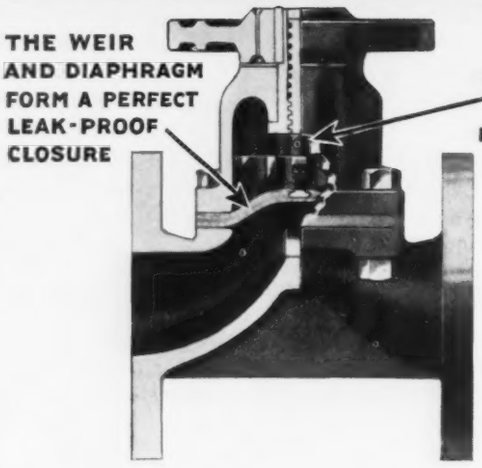
ALBERT C. RAU, Manager

327 Park Square Building **Boston, Mass.**

Reduced Rates on all Railroads

Just the VALVE

for Bleaching · Dyeing Finishing Operations in Rayon and Textile Plants



Hills-McCanna Saunders' Patent Valves are always free operating—do not "freeze"—offer long life—low maintenance cost and reduce shut-down time to a minimum.

Their opening and closing principle is a departure from customary valve design, eliminating need of seats—discs—packing glands or accurately machined surfaces to effect a tight closure. The positive acting diaphragm does it!

Recommended for Acids—Alkalis—Dyes—Liquors—Viscous, gritty solutions—Hot and cold water, etc. Made in sizes from ½" to 12". Send for New Valve Book.

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VALVES

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2463 NELSON STREET
CHICAGO, ILLINOIS

Send us your New Valve Book

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ADDRESS .....

CITY ..... STATE .....

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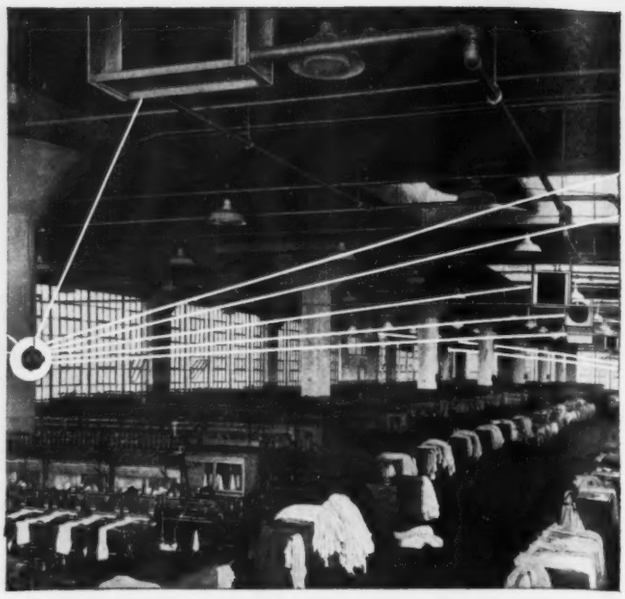


TEMPERATURE CONDITION . . .

your weave room

. . . and end costly production interruptions and damaged product quality . . . due to arid steam heat out of control.

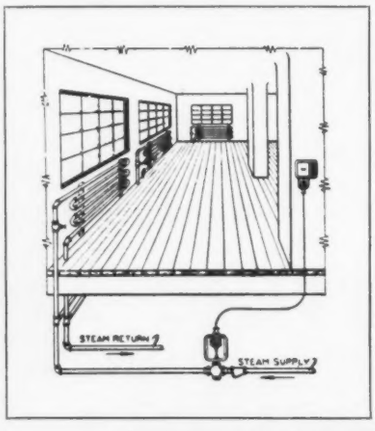
Textile fibres . . . highly susceptible to wide fluctuations in heat and relative humidity, demand automatic control of weave room conditions as a prime necessity in a profitable mill.

The Fulton Sylphon Company offers the means of controlling weave room temperatures simply . . . economically . . . dependably . . . with instruments designed specifically for this service.

Illustrated above: Sylphon No. 7 Regulators modulating steam flow to unit heaters to maintain constant, predetermined, correct temperature at the working level at all times.

Illustrated below: Sylphon No. 11 Regitherm installed to *modulate* steam flow to wall or ceiling radiation to accomplish the same desired control results.

Among other Sylphon instruments widely used to automatically control workroom temperatures are Sylphon Automatic Radiator Valves . . . simply installed in place of ordinary valves to regulate steam flow to each radiator in accordance with room temperature demands.



Write for Bulletins XT-50 and XT-80. Sent on request.

FULTON Sylphon FOR TEMPERATURE CONTROL

FULTON SYLPHON CO.
KNOXVILLE, TENN., U.S.A.

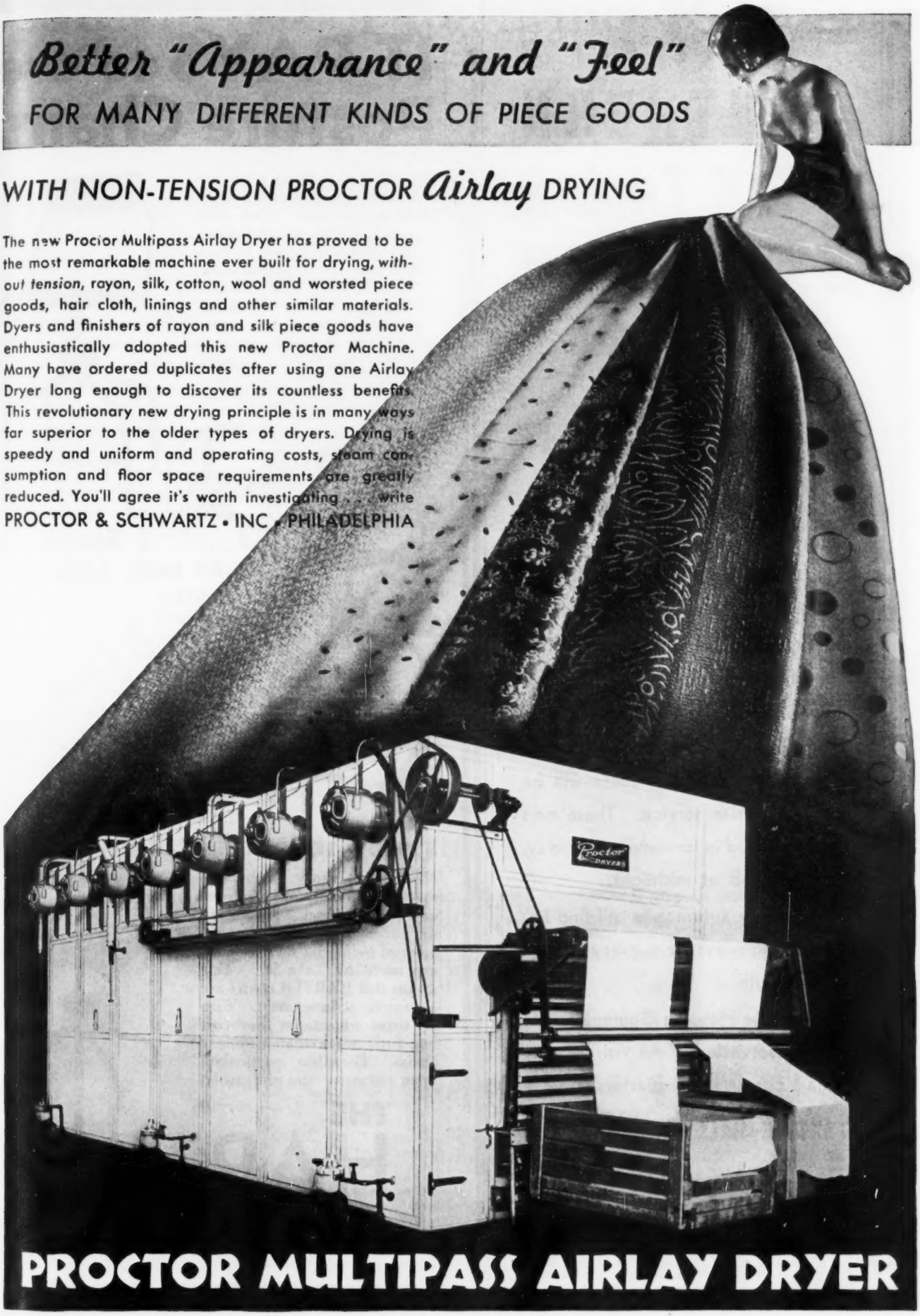
Representatives in All Principal Cities in U. S. A. and in Montreal, Canada and London, England

Better "Appearance" and "Feel"

FOR MANY DIFFERENT KINDS OF PIECE GOODS

WITH NON-TENSION PROCTOR *Airlay* DRYING

The new Proctor Multipass Airlay Dryer has proved to be the most remarkable machine ever built for drying, *without tension*, rayon, silk, cotton, wool and worsted piece goods, hair cloth, linings and other similar materials. Dyers and finishers of rayon and silk piece goods have enthusiastically adopted this new Proctor Machine. Many have ordered duplicates after using one Airlay Dryer long enough to discover its countless benefits. This revolutionary new drying principle is in many ways far superior to the older types of dryers. Drying is speedy and uniform and operating costs, steam consumption and floor space requirements are greatly reduced. You'll agree it's worth investigating . . . write PROCTOR & SCHWARTZ • INC. • PHILADELPHIA



PROCTOR MULTIPASS AIRLAY DRYER

T W E L F T H

SOUTHERN TEXTILE EXPOSITION

TEXTILE HALL

GREENVILLE, S. C.

APRIL 5 to 10, 1937

New and improved machinery, installations, accessories, and supplies will be shown by the leading manufacturers of America.

Interesting technical meetings will be held during show week.

Low railroad rates are now in effect. From Greensboro on the north, and Atlanta on the south, there will be nightly Pullman service. These cars will be parked in Greenville next day, and returned at midnight.

Travelers by automobile will find improved highways from every section of the South.

Please write Housing Committee for room reservations. All visitors may obtain comfortable quarters.

TEXTILE HALL CORPORATION

Remember the Dates

APRIL 5 to 10, 1937

IT PAYS to use Posture Chairs

HARTER steel factory posture chairs increase the productivity of seated workers. They support the body in an erect, alert, healthful position that in turn encourages fast, accurate work. Where HARTER Posture Chairs have been installed immediate increases in output have been observed, spoilage has been drastically lessened, the sick list has been shortened and other conditions improved.

3 Sizes

All Easily Adjustable

HARTER Factory Chairs are supplied in three sizes, differing only in height. All are capable of quick and accurate adjustment to fit the individual user. A positive set screw adjustment controls seat height. Angle and height of back are also adjustable. The two higher models have adjustable foot rests. Back rest is pivoted and automatically adjusts itself to the movements of the user's back.

STURDY—LONG LIVED

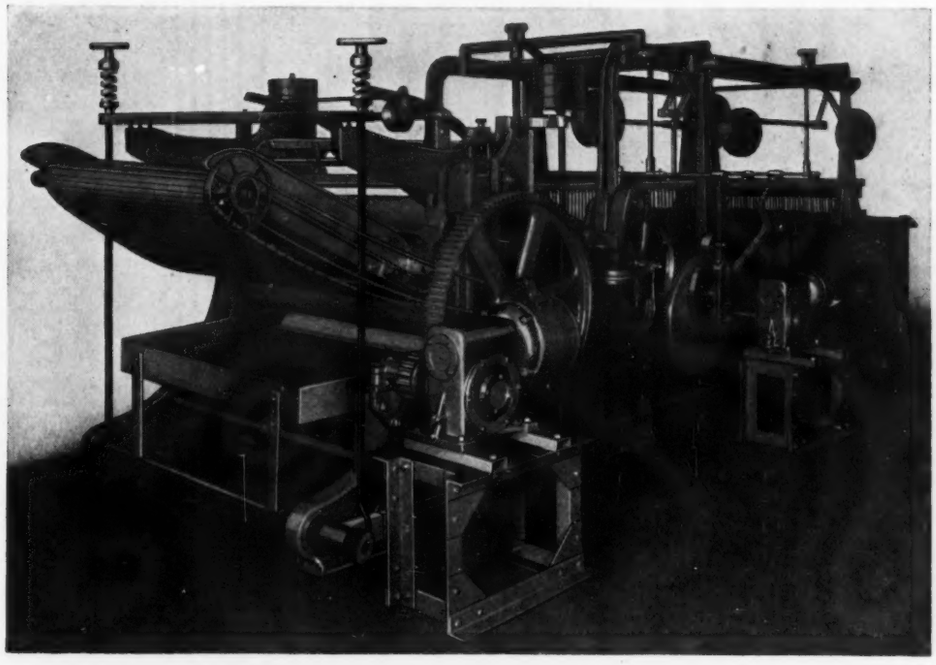
HARTER Factory Chairs are made completely of steel except seat and back. They stand up under the constant punishment of industrial service. They are made to "take it". This means that HARTER chairs are a permanent investment. With all these advantages they cost but little more than ordinary chairs. Complete particulars upon request — no obligation.

THE HARTER CORPORATION

Sturgis, Michigan

Manufacturer of the World's Finest Steel Seating Equipment

Sargent Wool Scouring Machines



LATEST DESIGN—

From years of experience Sargent has developed a Wool Scouring Machine which insures the highest quality of work with the minimum of operating and maintenance expense.

NEW FEATURES:

Improved suspended rake mechanism, new direct motor drive. Use of non-corrosive metals. Anti-friction bearings optional. Self flushing hopper bottoms. Added holding capacity.

●

In Service Since 1852

SARGENT PRODUCTS

Acidifying Machines—Automatic Extractor—Automatic Feeders—Backwashers—Backwash Dryers—Bagging Machines—Ball Winders—Carbonizing Dryers—Cloth Dryers—Carbonizing Dusters—Cotton Stock Dryers—Crush Roll Machines—Press Roll Machines—Single Apron Dryer—Skein Dryer—Special Dryers—Wool Dryers—Wool Washers—Yarn Conditioners—Yarn Scouring Machines—Burr Pickers—Mixing Pickers—Dusting Machines—Package Dryers—Tray Dryers—Opening Machines.

C. G. SARGENT'S SONS CORP.
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Graniteville, Mass.—Founded 1852

Southern Agents:
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Sargent is the Pioneer American Builder of Dryers

SUCCESSFUL TWISTING

A BIG CROSS WOUND PACKAGE, EASILY AND SMOOTHLY REVOLVED, REPLACES SMALL JERKY SPOOLS. THIS WITH LOWEST COST WINDING APPROACHES TWISTING PERFECTION . . . IT IS SECURED IN ALL

ABBOTT INSTALLATIONS

ABBOTT
MACHINE COMPANY
Wilton, N. H.

America's
PIONEER
Circle Makers

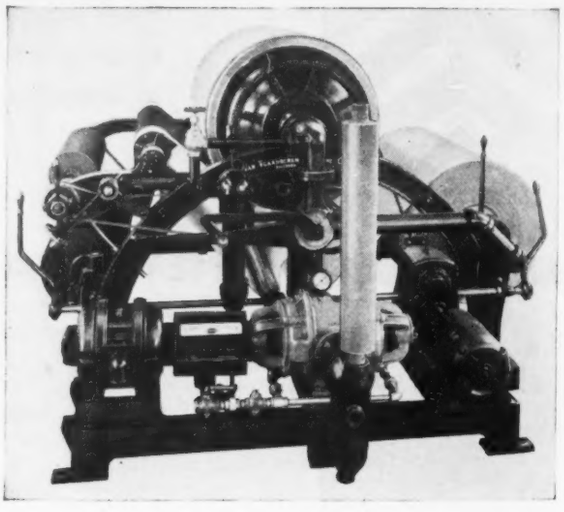
In 1870 — sixty-six years ago — we made the first Comb Circles in this country.
Our experience since that time has resulted in Comb Circles internationally famous for Quality and Service.

MILLER
HEATHCOTE
Tentering and Drying Machines

Today's Products

- Heathcote Tentering and Drying Machines
- Housings
- Ventilating and Circulating Fans
- Textile Combs of all descriptions, including:
- Comb Circles
- Mazzetti Patent Circles
- Steel Fallers
- Flax and Silk Gills
- Tentering Pin Pates
- Porcupines
- Steel Circle Plows
- Roller Cover Clamps

WILLIAM MILLER CO.
Established 1870
PROVIDENCE RHODE ISLAND
America's Pioneer Circle Makers



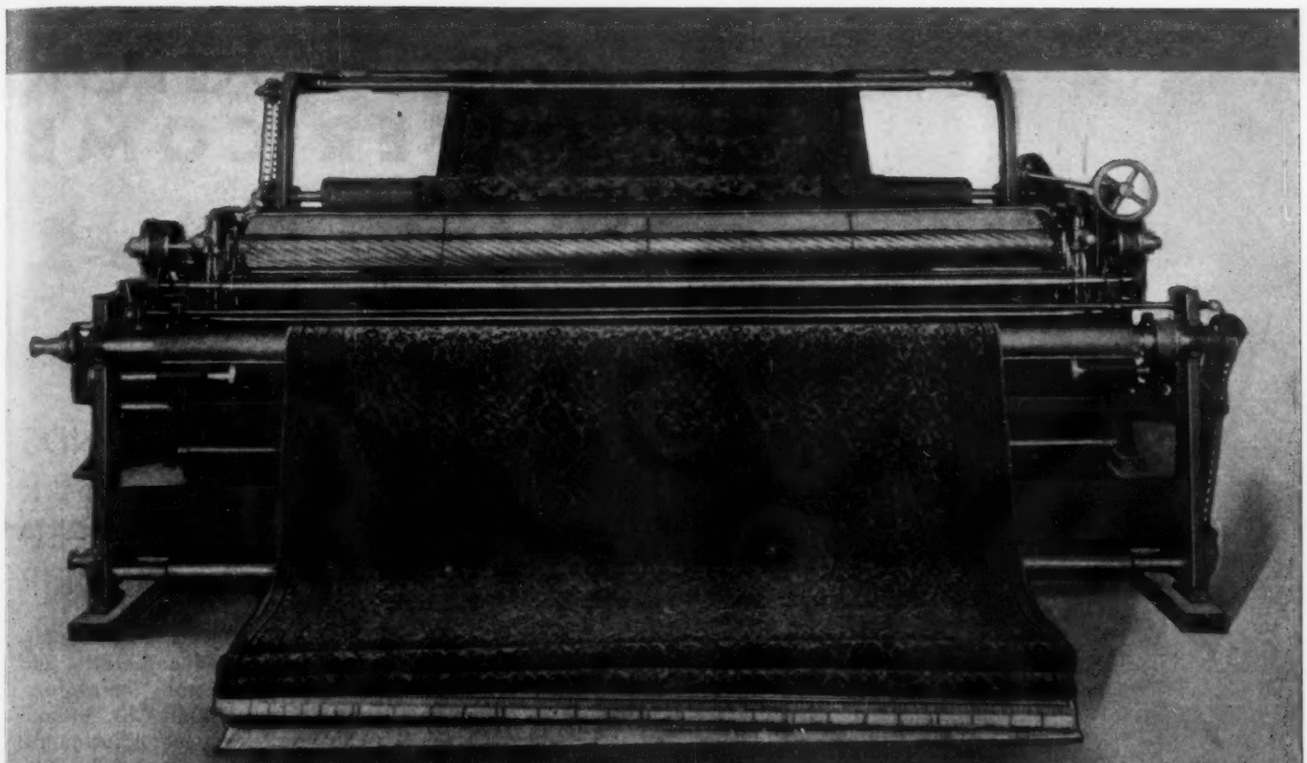
DECATE! Buyers are demanding decated fabrics. The cost on this machine is insignificant.

The market for Rayons and many other broad goods is rapidy realizing that Van Vlaanderen decated fabrics have a better hand, richer color and evener finish.

Meet this rising demand by using the Van Vlaanderen Decating Machine. With this machine the cost per yard is so low that it need scarcely be considered. Our machine does the fastest and the highest quality work that can be done.

Send a piece of cloth which we will decate and return for comparison

VAN VLAANDEREN MACHINE COMPANY
370 Straight Street **Paterson, N. J.**
World's largest manufacturers of silk and rayon processing machinery.



BRUCKNERS CARPET SHEARS

For Fine Shearing

Capacity: Up to 28/4 width, single or multiple rotor, three speeds.

Design: Emphasizing sturdy, vibrationless construction and accessibility for operator; new fine adjustment on blade support for easy ledger blade alignment.

Principle: Even shearing and lustrous finish through scissor-action concave cutting.

Experience: Since 1850—supplying world's leading carpet mills.

Consult us on your Shear Problems!

J. J. KREHBIEL COMPANY, Inc.
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TEXTILE MACHINERY

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WHOLESALE or RETAIL

Use Nation-wide
RAILWAY EXPRESS...

Your customers will get their goods, Christmas rush or regular, quickly and dependably by Railway Express. It's the economy and profit route. Rates are economical and in all cities and principal towns Railway Express picks up and delivers shipments promptly, door-to-door, without extra charge. They go forward at express train speed. No delays or detours and for extra-special speed and last-minute shipments there's Air Express—2500 miles overnight at low cost, too. Charges include insurance on all packages, and signed receipts at pick-up and delivery check each shipment. Through Railway Express's 23,000 nation-wide offices you can reach practically any customer in America and save literally days on deliveries.

Arrange your special holiday needs now with the nearest Railway Express agent. A phone call brings service or information.

RAILWAY EXPRESS
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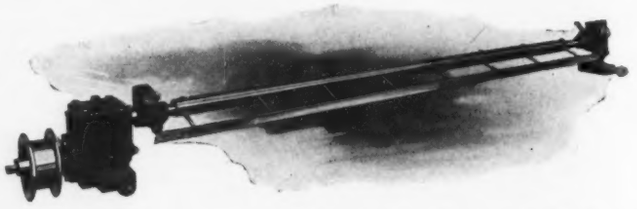
NATION-WIDE RAIL-AIR SERVICE

New PROCTOR DOFFER COMB



MEETS DEMANDS
FOR HIGHER
DOFFING SPEED
• STOPS OIL-DRIP

The new Proctor Ball Bearing Comb on your cards or garnetts will bring you improved quality, reduced waste, and savings in time, trouble and money. Combs, heretofore, have been capable of only 900 to 1000 R.P.M. without overheating, excessive wear, and frequent adjustments. This new Proctor Doffer Comb, however, runs fully 50% faster than preceding types and assures a new freedom from trouble . . . makes no noise . . . requires no adjustments . . . drips no oil . . . and lasts infinitely longer.

PROCTOR & SCHWARTZ, INC.
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DAVIS AND FURBER

Earn a Manufacturing Profit
By Using the Best
Machinery and Supplies

DUSTERS
PICKERS
CARDS
MULES
WOOL SPINNING FRAMES
SPOOLERS
DRESSING FRAMES
NAPPERS
CARD CLOTHING
NAPPER CLOTHING
GARNETT WIRE
LEATHER SUPPLIES

DAVIS & FURBER
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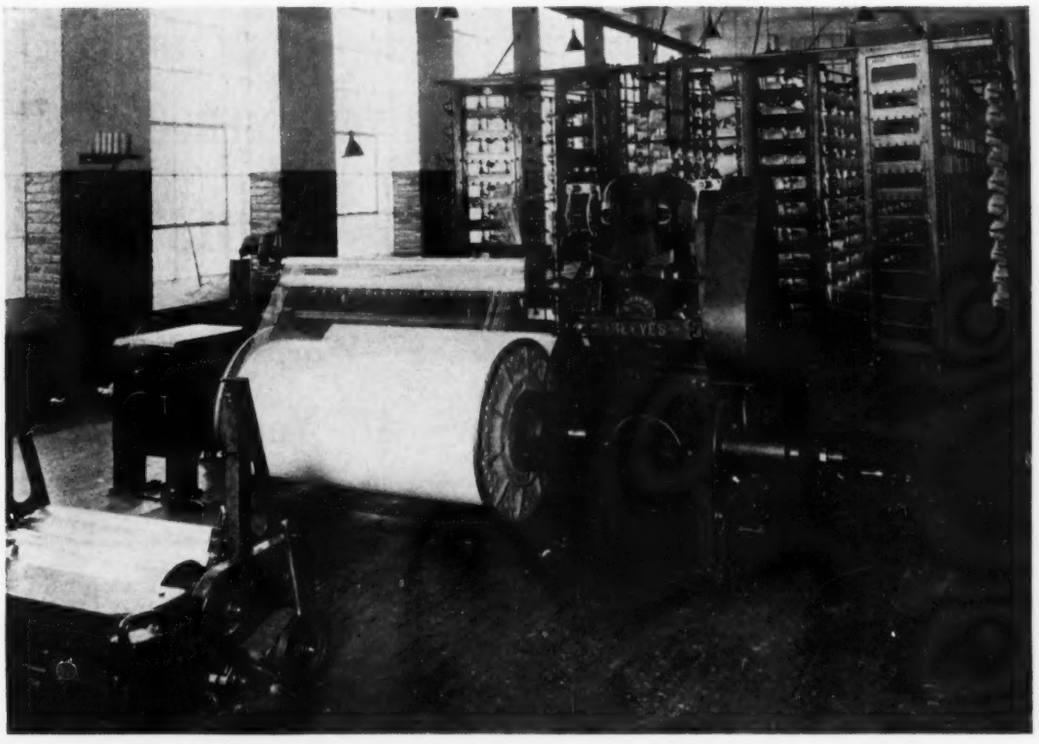
THE ACCEPTED STANDARD

COCKER

HIGH SPEED
DYE BEAM WARPER



This is a SPECIAL SPINDLE DRIVEN (no Cylinder) High Speed Section Beam Warper, shown making Dye Beams from a Magazine Cone Creel, designed and built especially for making Dye Beams of the uniform and required degree of yarn density so absolutely necessary to secure level even Dyeing of yarn on section beams.

- HIGHEST OPERATING SPEEDS
- LOWEST OPERATING COSTS
- UNIFORM DYEING RESULTS
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For further details, production, quotation, etc., write or wire

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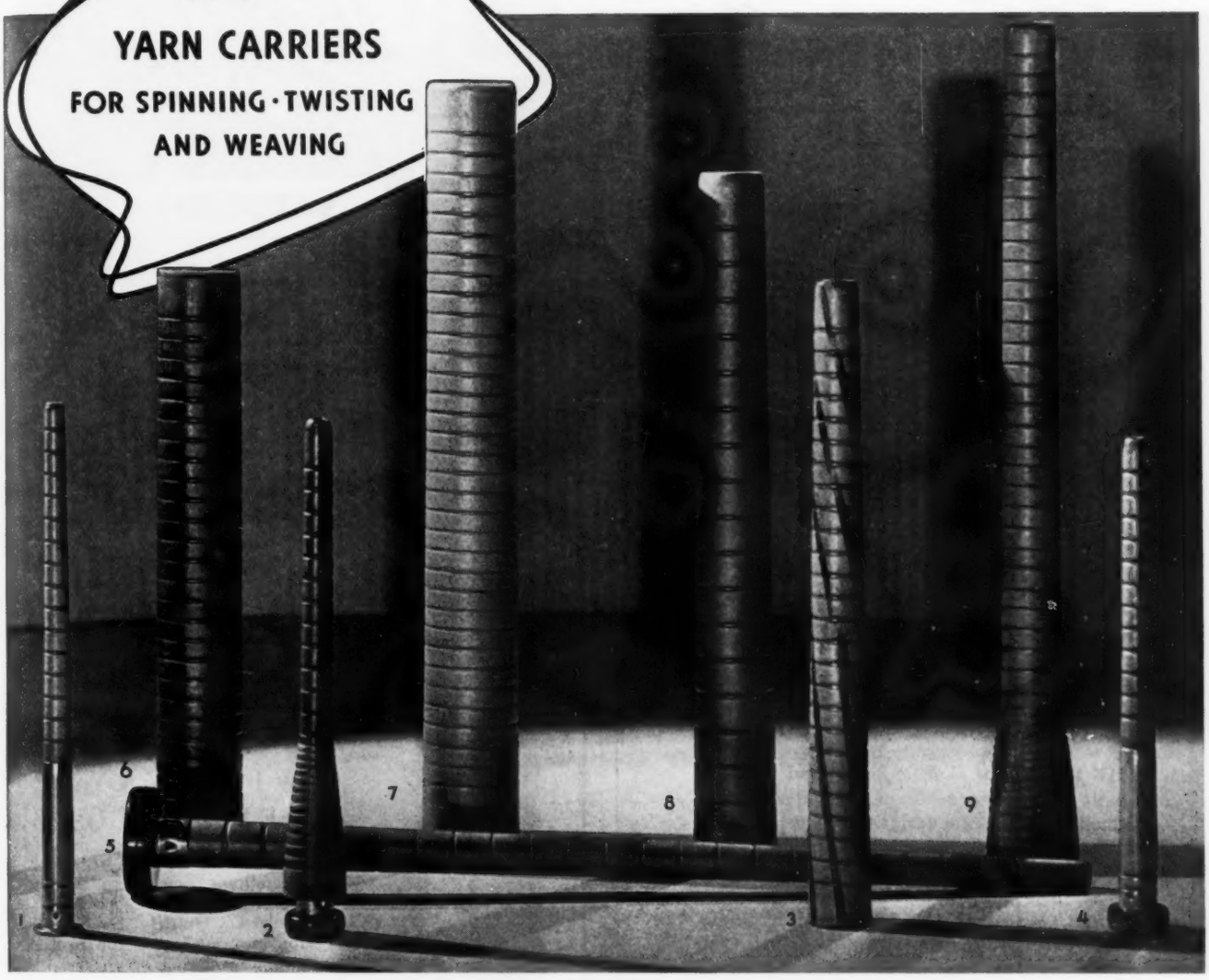
YARN CARRIERS
FOR SPINNING·TWISTING AND WEAVING



1. Filling quill with folded metal head suitable for electric feeler motion.
2. Filling quill with Bakelite head and bevelled base.
3. Spinning bobbin for worsted ring frame.
4. Filling quill, suitable for electric feeler motion, with Bakelite head.
5. Spinning bobbin for the new large package woolen mule.
6. Bobbin for twister frame.
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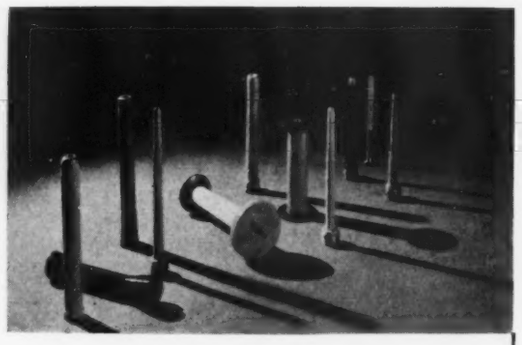

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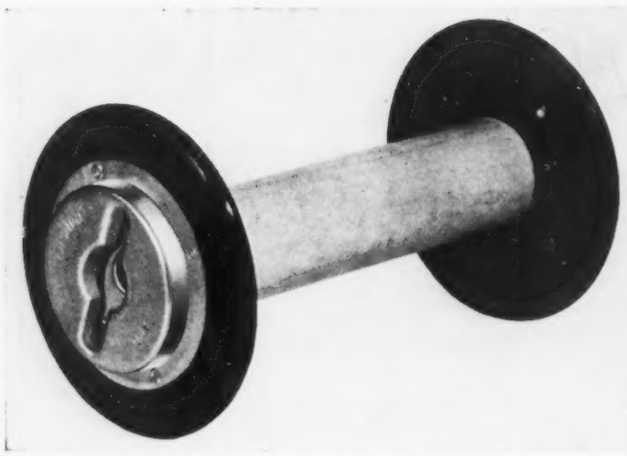

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with this fibre-head twister spool for real economy.

First cost is very little more—real cost is much less as they last indefinitely without breaking, splintering or warping. Patented ring-lock construction prevents heads loosening.

Lestershire Fibre-Head Twister Spools produce higher quality yarn of even twist, which means greater strength.

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2. *Standardized*, TO DYE EVENLY
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It CUTS your knitting costs to the bone by helping you to step up machine activity. It cuts your "seconds" to a minimum by assuring uniform lengths, uniform dyeing and uniform appearance. Two immediate savings for you from using SPUN-LO . . . yet it costs no more than ordinary yarn.

And stockings knitted of this superior yarn have ready sale. Buyers everywhere know it, know its better style, its ability to take it in all kinds of wear.

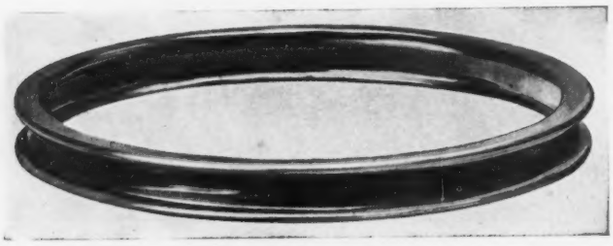
Use the SPUN-LO transfer and cash in on consumer acceptance of the name "SPUN-LO" due to national advertising in women's magazines

Spun-lo

RAYON YARN MAKES BETTER STOCKINGS

INDUSTRIAL RAYON CORPORATION · CLEVELAND, OHIO

Here's why you pay a "Ring Drag" Tax:



The ring above illustrates an extremely bad case of Ring Drag. Flanges may be narrow and wavy far less than this, yet necessitate speed reductions up to 15% or even more.

If your spinning and twister rings are worn and wavy, you'll find either that speeds have been considerably reduced or that you are paying a penalty in excessive ends down. You have a costly Ring Drag tax in the form of 10% to 15% loss in production.

Get back that valuable extra poundage by installing DIAMOND FINISH high-polish spinning rings and DIAMOND FINISH Eadie auto-lubricated twister rings.

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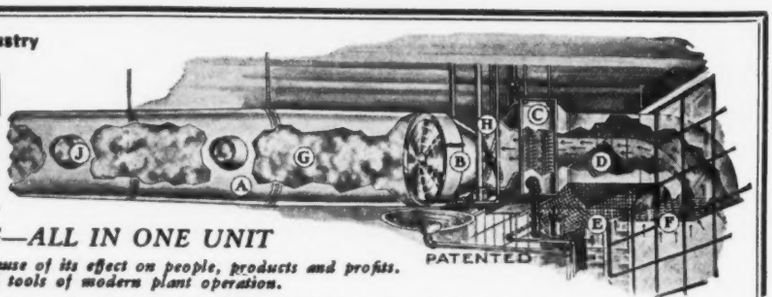

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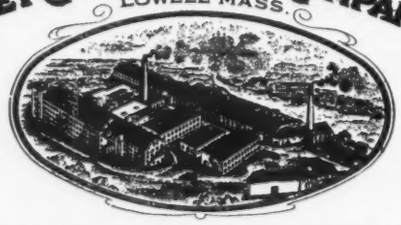

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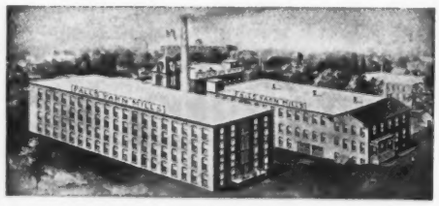

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Developed to meet the particular needs of the silk and rayon trade in the process of throwing, due to the recent adoption of the vertical ring, particularly of the lubricating type.

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By eliminating the pivoting action of the traveler, the traveler is at all times kept in close contact with the groove or device for lubricating the ring and assists in drawing therefrom the lubricant, distributing the same evenly over the entire inner surface of the ring; promoting a longer life to the traveler and a more even twist.

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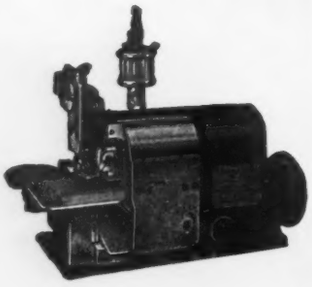

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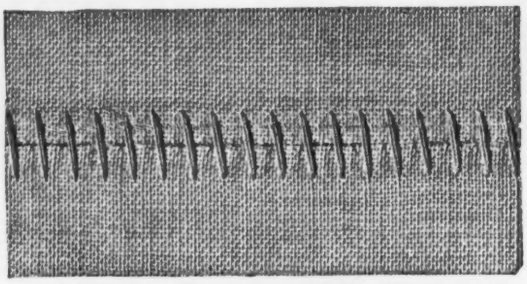
producing a butted seam to facilitate processing of textiles.



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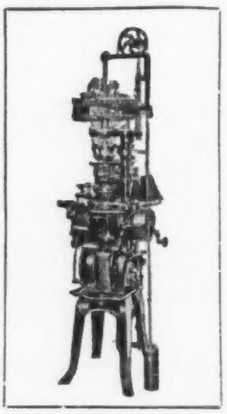

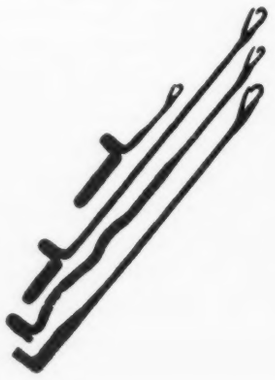

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NOTHING tells the story of the success of the new Union Special LOCKSTITCH any better than the steadily growing stream of repeat orders from manufacturers who have tried it and now know what this machine can do ..... Join these users and we believe you too will quickly discover why it is to your advantage to come back for more!
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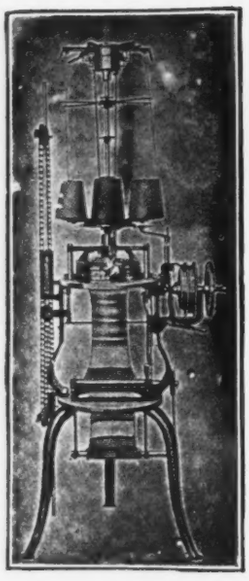
400 N. FRANKLIN STREET, CHICAGO, ILL.

FEWER MACHINE STOPS
are mighty important when you're working on a SHORTER WEEK

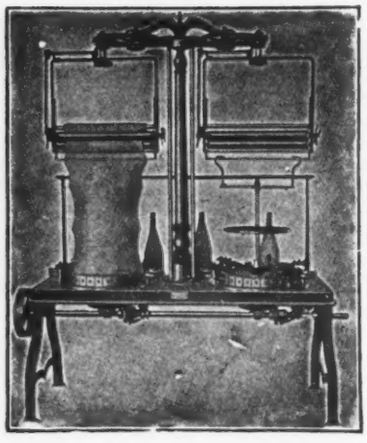
With hours of operation grown shorter, every production hour becomes more precious, every hour carries a bigger share of your fixed overhead. That's why you cannot afford any lost hours! And you may be sure that Crane Knitting Machines will do their part in keeping the needles going hour after hour without time loss. You will never trace a machine stop to these fast, smooth running machines. Let us give you the proof. Write for details.

CRANE MFG. CO.
Lakeport, N. H.



At the left. Improved Automatic 3-Colored Plain Stripes. Made in sizes from 7¼ in. to 20¼ in. inclusive, of any desired gauge. Measurements are back to back of cylinder needles. Knit fabrics for bathing suits, theatricals, athletic goods. Crawford stop motion applied when requested.

At the right. Spring Needle Underwear Machine with Automatic Take-Up. Sizes from 13 in. to 26 in. in diameter of any desired gauge, the number of feeds depending on the size of cylinders. Also in sizes from 10 in. to 32 in. diameter, for production of big variety of fabrics. Plain feeds, stockinet, eiderdown and astrachan feeds.



CRANE *Spring and Latch Needle* KNITTING MACHINERY

Improved Heavy Duty Foot Power Rotary Sewing Machine With Gear Driven Sewing Head

The best possible machine built for *heavy duty sewing* on light and heavy cotton and woolen goods, wet or dry, cotton ducks, woolen and cotton blankets, artificial leather or any heavy fabrics.

Machine is heavily constructed with base of sufficient weight to avoid the machine tipping, also machine cut gears throughout and rubber tired floor wheels.

DINSMORE MFG. CO.
SALEM, MASS.

No. 5

THE LOYAL T. IVES COMPANY

ESTABLISHED 1874

NEW BRUNSWICK NEW JERSEY

Manufacturers of

SPRING BEARD KNITTING NEEDLES

For Cylinder, Full Fashioned, Warp and Rib Knitting Frames, also Narrowing, Stand, Transfer Points, and Welt Hooks for Full Fashioned Machines; Slides, Sinkers, Jacks, Guides or Flat Eyes, Sley and Milanese Points, Transfer Points or Quills, etc.

Sheet Metal Specialties to Order

THE FASTLOCK IS YOUR ANSWER TO PROFITABLE KNEE LENGTH PRODUCTION

The Fastlock gives triple strength and greater security. Attaches garter tops with three separate rows of stitching.

No welt is required, eliminating an extra cost.

Produces more dozens per hour, lowering costs.

Handles both plain and open elastics.

Operates at high speed and does not injure the fabric or elastic top.

Does not affect two way stretch of elastic top.

Why not let the Fastlock bring these advantages to your knee lengths. May we demonstrate the Fastlock in your plant. It will point the way to more and better production.

WILLCOX & GIBBS SEWING MACHINE COMPANY

HOME OFFICE 656-658 BROADWAY . . . NEW YORK, N. Y.

MANUFACTURERS AND DISTRIBUTORS OF WILLCOX & GIBBS AND METROPOLITAN SEWING MACHINES

EUROPEAN REPRESENTATIVES

WILLCOX & GIBBS SEWING MACHINE CO., LTD., 20 FORE STREET, LONDON, E. C. 2, ENGLAND

PARAMOUNT Dual Heat Hosiery Finishing Machine

CREATING Incomparable Quality in Hosiery Finishing and Establishing Production Figures that are truly amazing, the Paramount Dual Heat Machine will revolutionize and simplify your hosiery drying and finishing methods.

Compare this Machine with your present equipment. You will find that it requires less square feet of floor space per dozen than any existing method of finishing; less steam consumption—heating is direct; less power—a one-quarter horsepower motor operates the entire machine; less investment per dozen—reasonably priced; less upkeep—built to render years of service; and production possibilities with quality work that cannot be challenged.

Machines will pay for themselves in direct savings to you.

WRITE FOR DESCRIPTIVE BOOKLET.

Paramount Service With All Paramount Products

Paramount Textile Machinery Company
Main Sales Office
538 S. Wells Street, Chicago, Ill.

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TRADE MARK

Latch needle machines for:

Hockey caps	Shaker caps
Scarfs	Berets
Mufflers	Sweaters

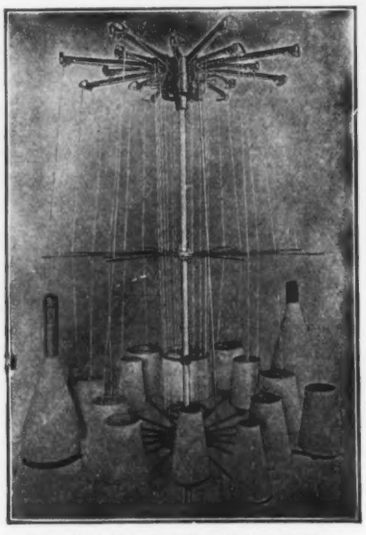
Spring needle machines for:

Balbriggan	Terry cloth
Overcoating	Polo shirts
Sweaters	Fancy outerwear
Single fleece	Double fleece

Sample analysis and information at your request

TOMPKINS BROS. CO.
623 ONEIDA ST. SYRACUSE, N. Y.
SINCE 1846

CRAWFORD
STOP MOTIONS



Crawford Regular Type Stop Motion.

Automatically stop any KNITTING MACHINE INSTANTLY if yarn breaks, or other trouble appears—prevent holes, press-offs and needle breakage.

Three types:
Regular "B" Control "Elstop"

CRAWFORD MFG. COMPANY
New Brunswick, N. J.

— perfectly matched leg and foot on the New, Modern WILDMAN Single Head, Single Unit Full Fashioned Hosiery Machine. Investigate this and other production advantages.

WILDMAN MANUFACTURING COMPANY
Full Fashioned Division ***Norristown, Pa.***

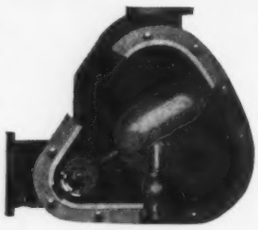
The New

WILDMAN SINGLE HEAD, SINGLE UNIT FULL-FASHIONED HOSIERY MACHINE

FOR PROCESS STEAM CONTROL

REPLACE THOSE OLD TRAPS WITH RELIABLE, DURABLE MULTIPORT DRAINERS

Put an end to the waste and operating efficiency caused by entrained liquids in process steam. Cochrane Multiport Drainers assure continuous removal of condensate and the delivery of hot, dry steam to the point of usage. This means rapid, uninterrupted process operation, resulting in a substantial saving in time and money.



Cochrane Multiport Drainer

Write—now—for detailed information

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Everything for Textile Printers
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KNITTING MACHINERY

Latch Needles
for HOSIERY
UNDERWEAR
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Spring Beard Needles
for CIRCULAR
FLAT
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All products guaranteed to give satisfaction.

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Textile, Laundry
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Special Soaps
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for all types of Knitting Machines

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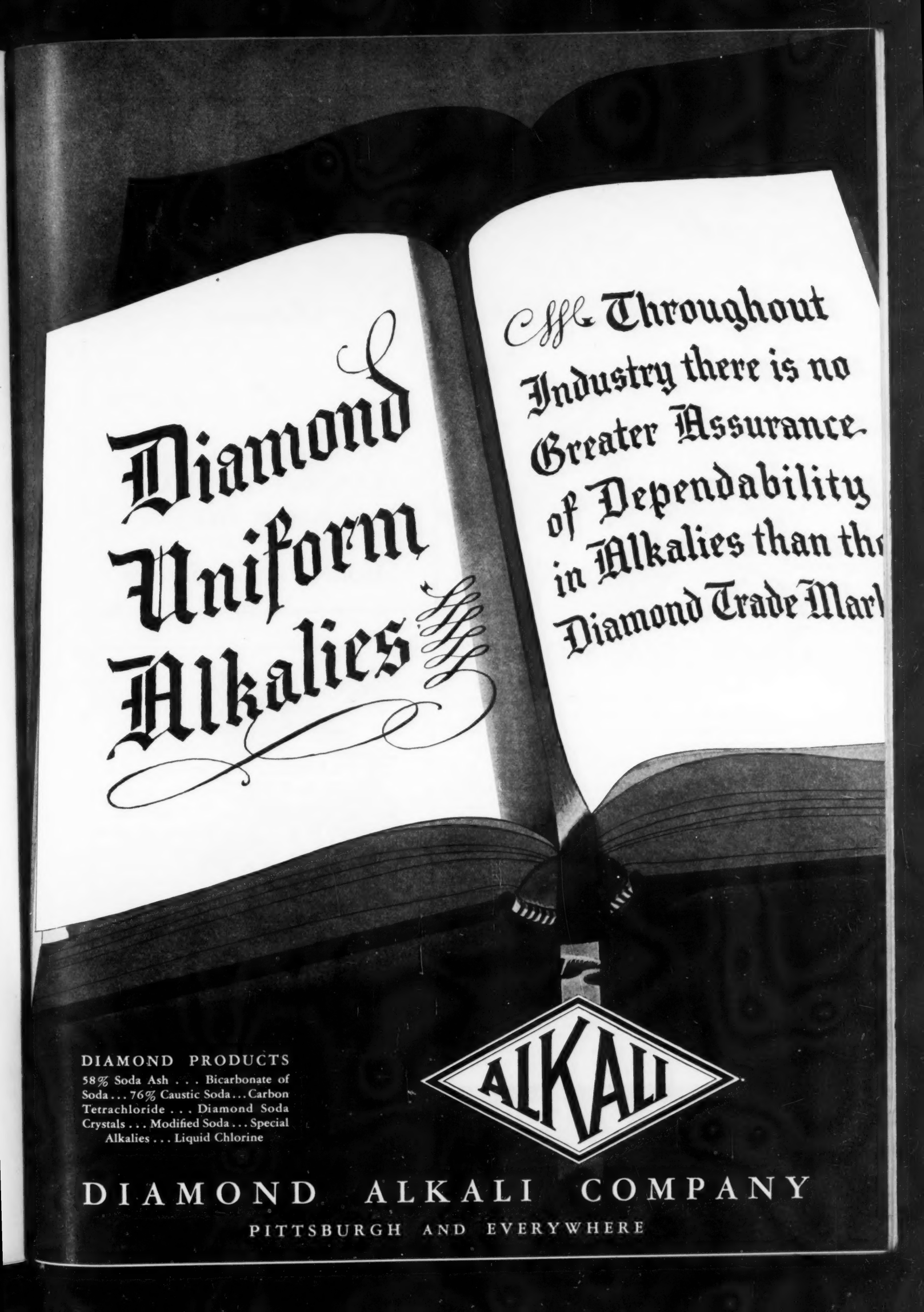
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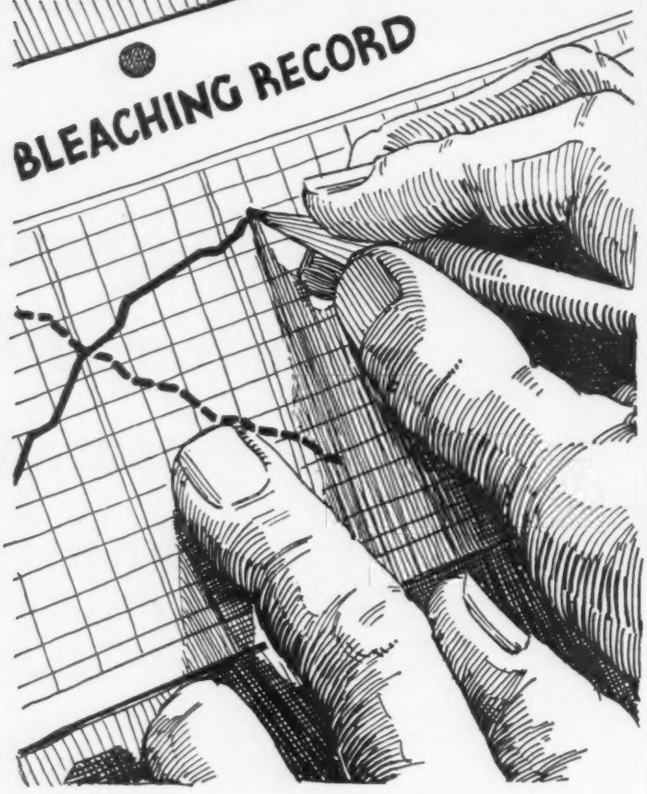
ALKALI
DIAMOND ALKALI COMPANY
PITTSBURGH AND EVERYWHERE

Up GOES PROFIT

BLEACHING RECORD



Down COME "SECONDS"

JUST a little rust spot, or the tiniest hole in hosiery and profits take a dive. Keep the profit curve up, and push the "seconds" line down by bleaching with the specially purified textile silicate of soda—STAR.

Star safeguards your goods and conserves peroxide, and here are the reasons:

1. Star's clarity and purity prevent flocculent material from depositing on the fabric. Purity also aids in preventing rust stains.

2. Star stabilizes the peroxide bath and releases the oxygen evenly so that the fabric takes the bleach with a minimum of waste.

May we prove these two-fold advantages in your mill?

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Chicago Sales Office: 205 W. Wacker Drive. Stocks in 60 cities.
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SILICATE OF SODA

CLINTON STARCHES

For All Textile Purposes

Manufactured by

CLINTON COMPANY

CLINTON, IOWA

Quality « » Service

HOSIERY SPORTSWEAR AWNINGS UPHOLSTERY PIECE GOODS

Laurel **SPLASHPROOF No. 5**

Like the well-known duck's back, your hosiery or piece goods repel water after a Laurel Splashproof treatment—the new splashproof, waterproof and non-coating finish which adds the extra life and service your trade demands.

LAUREL SOAP MANUFACTURING CO., Inc.
Wm. H. Bertolet's Sons
Established 1909
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AVITEX

TRADE MARK

YOU can secure better finishes and at the same time avoid rancidity, discoloration and disagreeable odors by using the Avitex line of finishing agents derived from fatty alcohols.

There is a grade of Avitex for every type of material, designed to produce any desired type of finish. It will pay you to investigate the possibilities of the Avitex line. For additional information or technical assistance, communicate with the Fine Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Delaware.

NOW AT NEW LOW PRICES

The popularity of these quality finishing agents has resulted in greatly increased production and consequently low manufacturing costs. In accordance with our usual policy, we have passed this saving along to our customers in the form of lower prices.

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E. I. DU PONT DE NEMOURS & CO., INC.

ORGANIC CHEMICALS DEPARTMENT

FINE CHEMICALS DIVISION, WILMINGTON, DELAWARE

AVITEX C
(PATENTED)
***Formerly* Brilliant Avirol L-200**

This produces a *soft, full* finish with a *smooth, silky* feel, when used alone or in combination with starches. Particularly suitable for finishing *cotton* fabrics, but also satisfactory for other fibers.

AVITEX SF
(PATENTED)
***Formerly* Brilliant Avirol L-142**

Produces a *soft, full* finish with excellent draping qualities. Most suited for the finishing of rayon fabrics of all types. Also effective in finishing cotton fabrics where a *full, close* face is desirable, as it has a pronounced swelling action on the fibers.

AVITEX W
(PATENTED)
***Formerly* Brilliant Avirol L-168**

Is especially suited for heavily calendered finishes on cotton and for finishes on rayon lining fabrics. Produces a *full, glossy* finish with excellent draping qualities.

AVITEX AD
(PATENTED)
***Formerly* Brilliant Avirol L-144**

A general softening agent with high solubility, lime and metallic salt resistance and good penetrating power. Very effective for use as a leveling and softening agent in the dye-bath, particularly on *acetate* fibers. (Excellent where a *raggy* finish is required).

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TRADE MARK REG. U. S. PAT. OFF.

for TEXTILE SODA

Solvay Textile Soda is ideal for wool scouring, and cotton and wool finishing. You can count on its meeting every requirement of textile operation because it is a mild, specially prepared soda of highest purity and quality.

for CAUSTIC SODA

SOLID - GROUND - FLAKE - LIQUID

For full strength and effective action, ask for SOLVAY Caustic Soda. Every step in its manufacture is scientifically controlled to insure highest standards.

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Potassium Carbonate • Potassium Carbonate Liquor
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. . . no matter WHAT you bleach

Whatever the nature of the fabrics you are now bleaching, BECCO Hydrogen Peroxide backed by BECCO Technical Service can bring new advantages. A BECCO Engineer, thoroughly experienced in modern bleaching problems, is prepared to assist you. Permit us to demonstrate.

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Headquarters for Latex . . . Normal . . . Concentrated and Processed . . . for coating . . . combining and adhesive purposes. Perfectly blended in bulk . . . controlled quality . . . controlled uniformity. Supplied in tank cars or drums. Invite our chemists into consultation.

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double purification

YOU need no longer hesitate to use electrolytic caustic soda. It is now available so low in salt, iron, and other impurities as to meet the most exacting requirements of all cotton textile and rayon manufacturers.

A new purification process developed by Pennsylvania Salt Manufacturing Company, makes this remarkably pure new product possible. It is supplied in aqueous solution in 8,000 gal. single unit tank cars as well as in solid, flake, or ground form in drums.

Behind its dependable quality is a background of more than 86 years of experience in producing superior chemical products for American industry. Our engineering staff will gladly assist you in all problems of storing, pumping, piping, and dissolving. This service is free.

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A water emulsion of a clear, colorless, tough and elastic resin. A unique permanent finish for special applications

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Liquid Sulphur Dioxide

Made by a patented process and manufactured exclusively by ourselves.

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Eliminates danger of tendering. Economical in cost. Convenient to apply.

Detailed information regarding our special apparatus for application of ESOTOO gladly sent you on request.

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Normal and Concentrated

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Agents in U. S. A. for Dunlop Concentrated 60% Latex, product of Dunlop Plantations, Ltd.

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CHARLES T. WILSON CO., Inc.
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As the textile industry marches on, each new dawn of prosperity emphasizes the need for improved ways and means to build business.

In 1937, as in the past three score and ten years, we will contribute to textile progress with outstanding products for sizing, printing and finishing. It is the special task of our laboratories to provide dependable materials for greater efficiency and economy.

Renewing our pledge of service, we wish you a full share of prosperity in 1937.

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STARCHES, DEXTRINES AND GUMS FOR
SIZING • PRINTING • FINISHING

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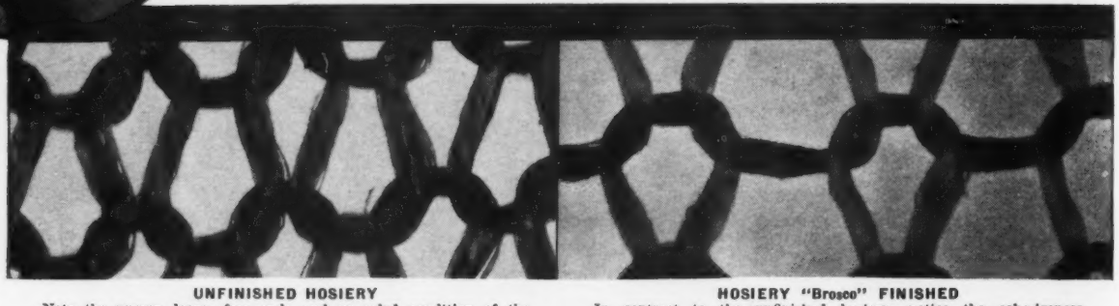
The FINISH makes the difference!



UNFINISHED HOSIERY

Note the uneven loops, free ends and unsealed condition of the threads, so apparent in this unretouched microphoto. As seen by the naked eye, the hosiery has an unattractive "fuzzy," uneven appearance. And, unfinished, the hosiery has but a fraction of its normal wearing qualities.

HOSIERY "Brosco" FINISHED

In contrast to the unfinished hosiery, notice the cohesiveness of the threads and the regularity of the loops, as seen under a powerful microscope. Important this is to the appearance and wear of the hosiery . . . it means straight wales; a finer, lovelier texture; and a greatly lengthened service life.

Truly, the finish makes the difference! And it's a vital difference to you—your hosiery volume and profits. For it is "Brosco" Finishing that gives this hosiery its lovely dull, soft texture—the qualities that "sell on sight." And it is "Brosco" Finishing that enables these brands to give *better than average wear*, resisting runs and spots, retaining its beauty through innumerable washings.

Briefly, it is "Brosco" Finishing that enables mill and retailer to meet the exacting demands of modern women . . . to build, soundly and profitably, the steady hosiery volume which is the backbone of business—and which comes only from completely satisfied customers.

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QUALITY UNIFORMITY SERVICE

FORMIC ACID

85% and 90% Strengths

Noted for its purity, uniformity and stability. Will not darken when exposed to light. Will not cloud up when diluted. Free from sulphates and chlorides.

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"SOLVES *De-Sizing* PROBLEMS"

Diastafor Department

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GRASSELLI FORMIC ACID

won't tender the most delicate fabric · yet exhausts the dye bath almost completely

There will never be any danger of tendering delicate fabrics when the formic acid used in the dye bath is GRASSELLI GRADE. The careful, accurate chemical control used in its production insures an unvarying uniformity in quality, free from sulphates and chlorides. Its crystal clearness remains the same, never darkening when exposed to the light.

Although it is always mild and safe, GRASSELLI Formic Acid, 85% and 90%, has the faculty of completely exhausting the dye bath. Being both an acid and an aldehyde, it has properties not obtainable with other exhaust agents—producing more brilliant colors in dyed fabrics, with no streaky or doudy effects, and always level colors even in cross dyeing. Any Grasselli branch can supply you quickly.

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Alums	Muriatic Acid
Aqua Ammonia	Nitric Acid
Barium Chloride	Oxalic Acid
Bi-Chromate of Soda	Phosphate of Soda
Bi-Sulphate of Soda	Silicate of Soda
Bi-Sulphite of Soda	Sulphate of Soda, Anhydrous
Carbonate of Soda	Sulphite of Soda
Caustic Soda Solid and Flake	Sulphide of Soda
Chloride of Lime	Sulphuric Acid
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Of course you wouldn't give Wyandotte as a Christmas present to your family or friends. But while you're enjoying a Merry Christmas in your home don't forget to give your business a Christmas present, too. Give it Wyandotte, and your business, and you, will enjoy a Happy and Prosperous New Year.

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Will Help Balance Your Budget

An accurate check on each machine reveals errors that easily ruin surpluses.

Productimeters increase machine efficiency, record wage payments, step up production and in many cases eliminate one or more operations.

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Our 57 years experience in the building of counting and measuring machinery, and over 100 standard models, assure you of the right machine at the least cost.

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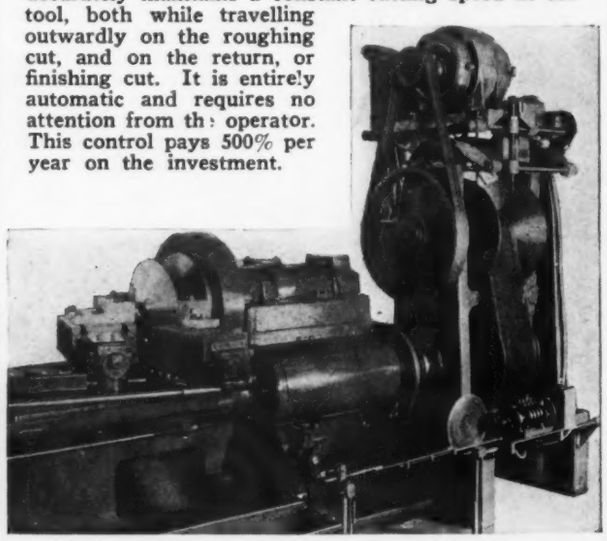
This Lewellen Transmission and Automatic Electrical Control applied to a Gisholt Simplematic Lathe, accurately maintains a constant cutting speed at the tool, both while travelling outwardly on the roughing cut, and on the return, or finishing cut. It is entirely automatic and requires no attention from the operator. This control pays 500% per year on the investment.



The Lewellen will solve your variable speed control problems and save you money. Lewellen engineers are at your service, to work with you and develop the correct application for your particular requirement. Give us the chance. It will not obligate you in any way.

LEWELLEN MFG. CO.

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SODIUM BISULPHITE

Also: GLAUBER'S SALT - NITRE CAKE - SODIUM SULPHIDE - SODIUM SILICATE - TIN TETRACHLORIDE - TIN CRYSTALS-POTASH - ALUM SULPHURIC, MURIATIC & NITRIC ACID - and other Heavy Chemicals of Standard Purity.

"Service" as General Chemical Company conceives it, starts with prompt and intelligent attention to your initial inquiry and carries through until the final shipment of your year's delivery schedule is safely in your hands. The company's nation-wide organization is one in upholding this standard. Address your inquiry to the nearest office.

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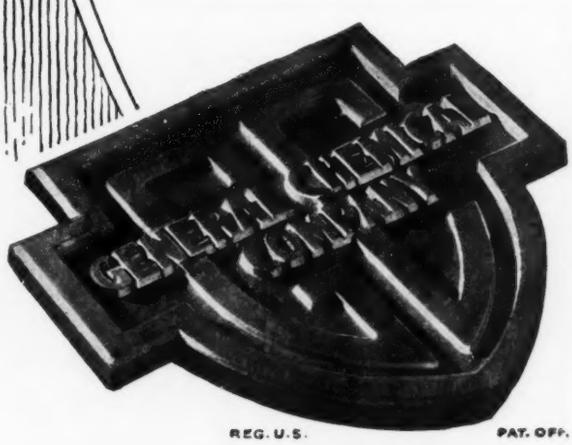

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"We Must Have a Finish Like That"

COLLECTIVE THINKING Will Help You Get It

When you are confronted with new finishing problems and past experience does not give you the answer, remember that "time is money" and that mistakes are costly. Choose the quickest and surest road to a solution, namely COLLECTIVE THINKING.

Collective thinking via A-H Consultation Service has solved thousands of stubborn sizing and finishing problems for textile plants. This is only to be expected inasmuch as A-H Service is backed by a company experience of 121 years and a staff of specially trained chemists, assisted by a completely equipped, modern laboratory.

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Sizing and Finishing Gums and Compounds . . Softeners . . Soluble Oils . . Tallow . . Waxes . . Soaps . . Flour . . Dextrines . . Starches . . Pigment Colors and Lakes . . Ammonia . . Acids . . Blue Vitriol . . Borax . . Bichromate of Soda . . Bichromate of Potash . . Liquid Chlorine . . Chloride of Lime . . Caustic Soda (solid or flaked)

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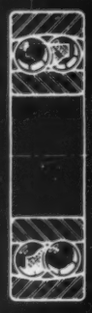

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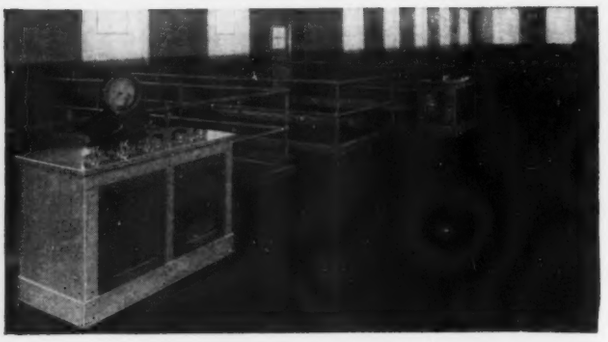

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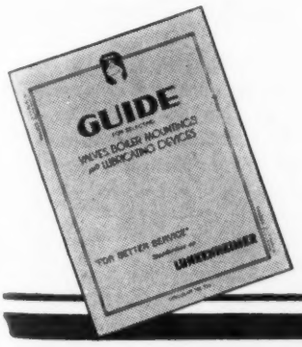
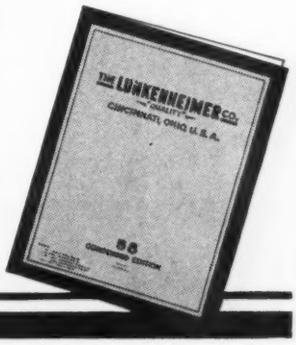


The Guide is a ready reference for selecting Valves, Boiler Mountings and Lubricating Devices in which products are grouped by pressure, type and use. The catalog describes and lists the Lunkenheimer line. Ask the distributor for copies or write us direct.



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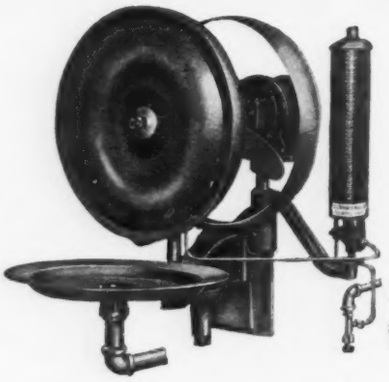

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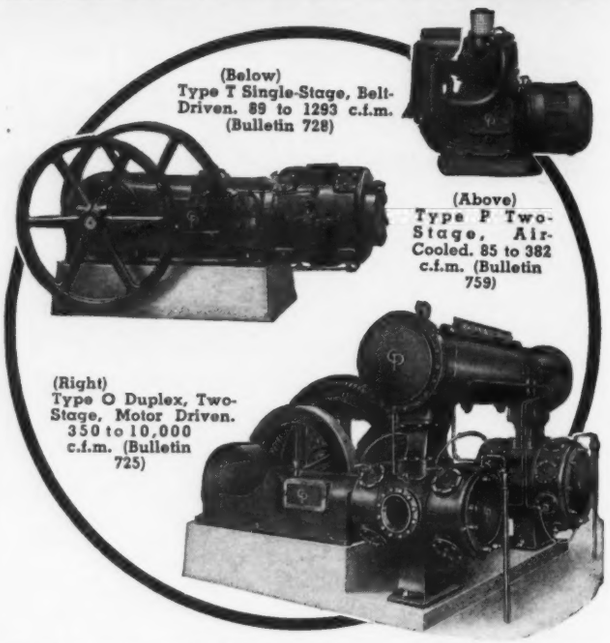

(Below) Type T Single-Stage, Belt-Driven. 89 to 1293 c.f.m. (Bulletin 728)

(Above) Type P Two-Stage, Air-Cooled. 85 to 382 c.f.m. (Bulletin 759)

(Right) Type O Duplex, Two-Stage, Motor Driven. 350 to 10,000 c.f.m. (Bulletin 725)

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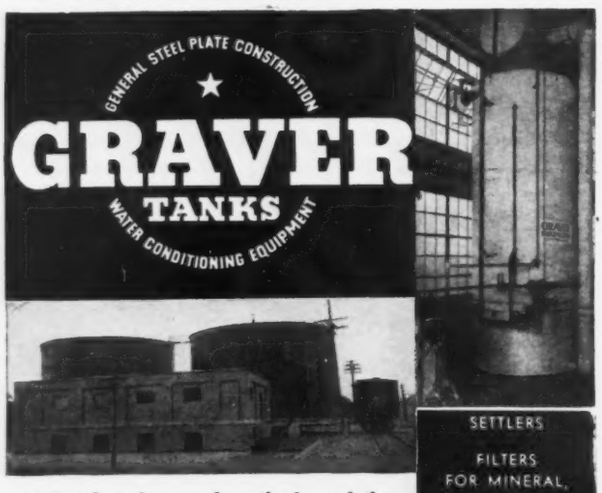

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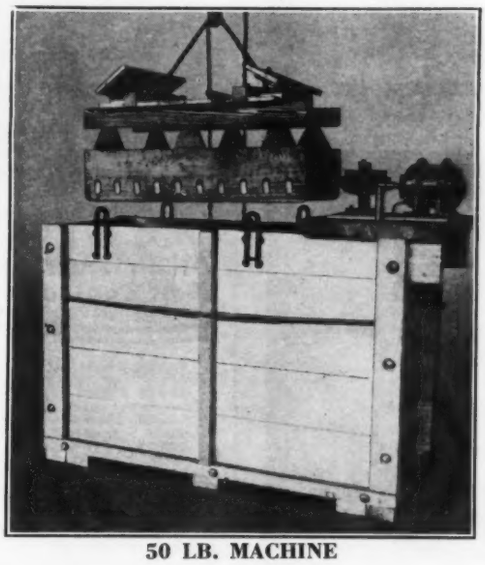

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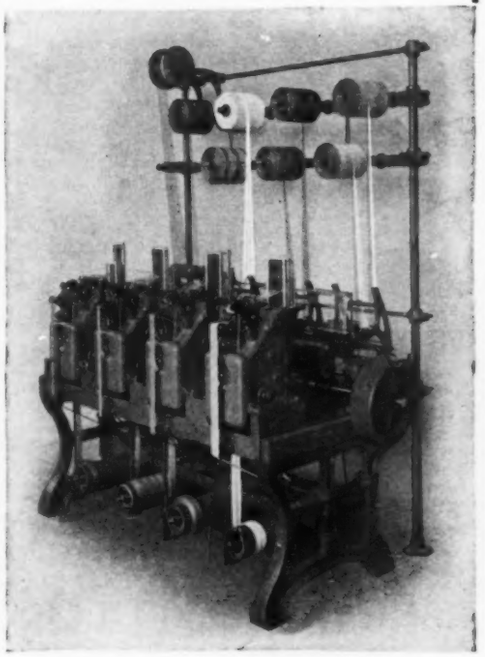

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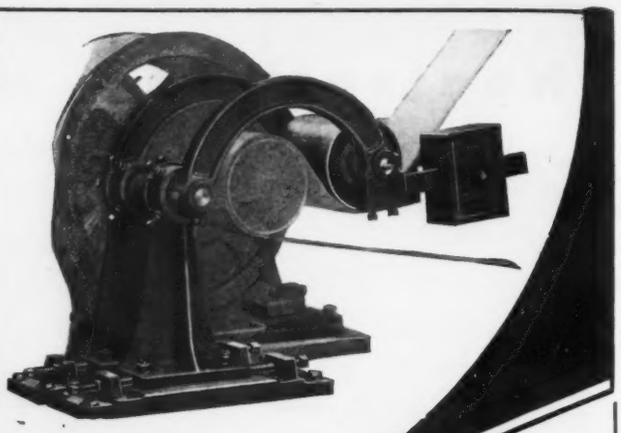

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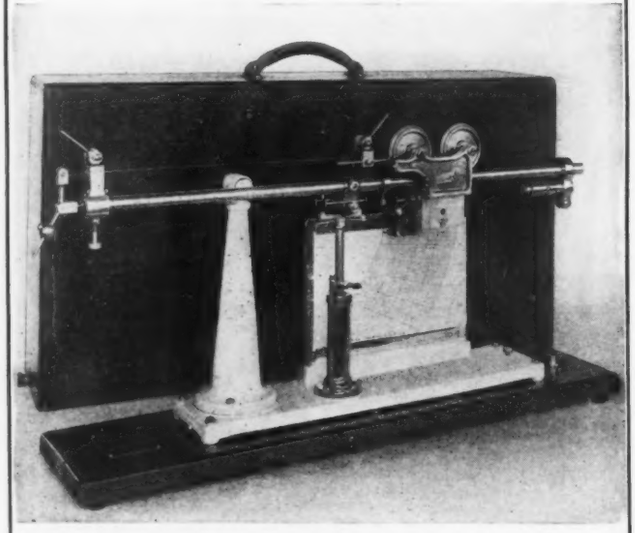

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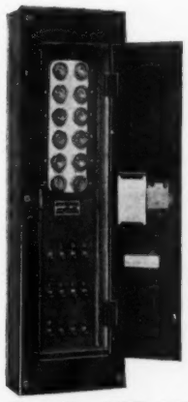

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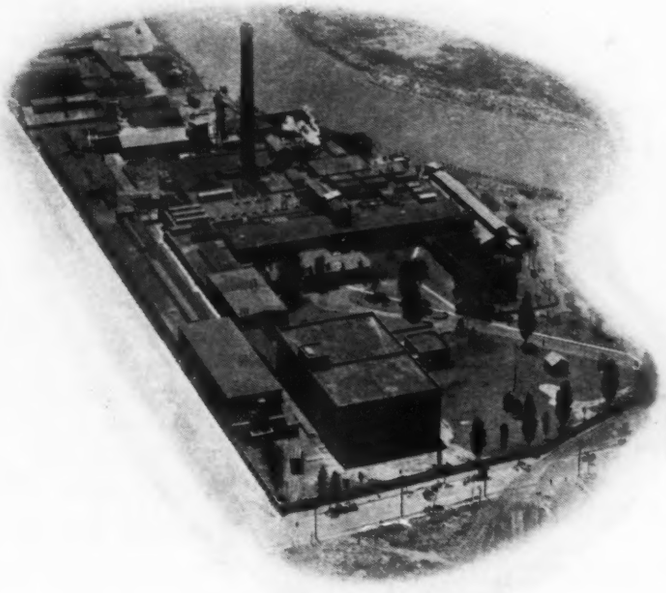

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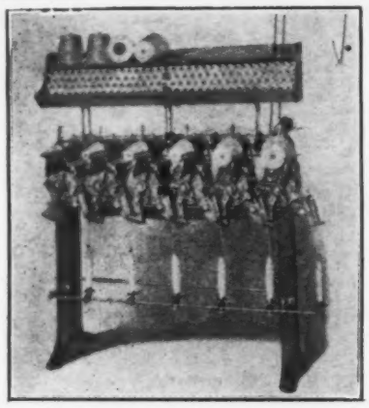
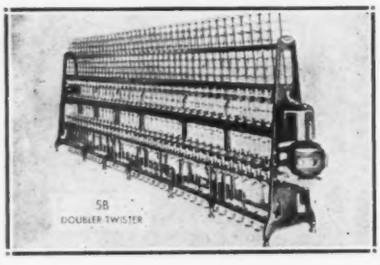
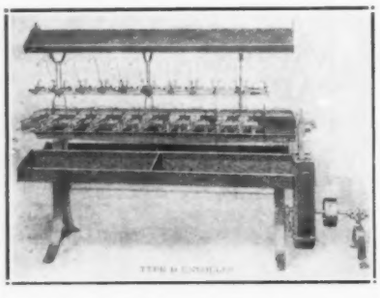




Reconditioned and Guaranteed Yarn Winding and Spinning Machinery for Domestic & Export Sales



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1—Textile 66" 3 **ROLL CALENDER** 2 Steel, 1 Husk Roll, 25 H.P. Motor.
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1—36" **Sargent Burr Picker**
1 60" **Card** with Feed
1 4-section **Proctor & Schwartz Ceiling Carpet Dryer**

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1—48" & 1—60" Furbush Card Grinder
1—Portable 60" Traverse Grinder
2—96 spindle Twisters 4" Ring-Draper
1—Collins 192 sp. Twister Fancy

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50—No. 90 Universal Winders "REBUILT"
6—Jack Winders, J. & B. 40 to 144 spindle
2—Lever & Grundy 48 spindle Cop Winders
1—O. Lever 40 spindle Cop Winder
1—378 Sp. Whitin Long Chain Quiller
2—90" Saco Lowell Worsted Warp Slasher
1—36" Johnson Rayon Slasher
6—6 sp. Worcester Warp Compressors
72" to 90" Pin and Pinless Warping Mills
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3—Eastwood 8 yard Warpers 82" NEARLY NEW.
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14—Lindsay Hyde Reels
12—Beaming Frames, various widths
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1—6" 12 drum pressure spooler
4—48" Compressor Spoolers
3—100 spindle Foster Coners No. 30
10,000—Sipp Silk Spools 3⅝" Trav.
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8,000—Fibre Head Silk Spools 3"x3¼" Trav.
2,000—Wood Spools Fibre Head 4"x4½" Trav.
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30—Narrow Fabric Looms ½" to 4" spaces

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40— 82" C.&K. Looms, 4x4 box
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1—48" and 1—56" Calender
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1—Hurricane Yarn Scouring Machine
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1—72" 24 roll Borscher Napper
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1—David Gessner, Jumbo type Rotary Cloth Press 66½"

DYEING & FINISHING MACHINERY, Continued

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1—Hurricane Skein Yarn Dryer
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1—41" Boarding Machine
1—52" Boarding Machine
1—72" Singer 3-Burner
1—72" Sargent Raw Stock Dryer, 85' long
1—30" Poland Copper Basket Extractor
1—48" King & Gerber Copper Basket Top Vertical Motor Driven Extractor
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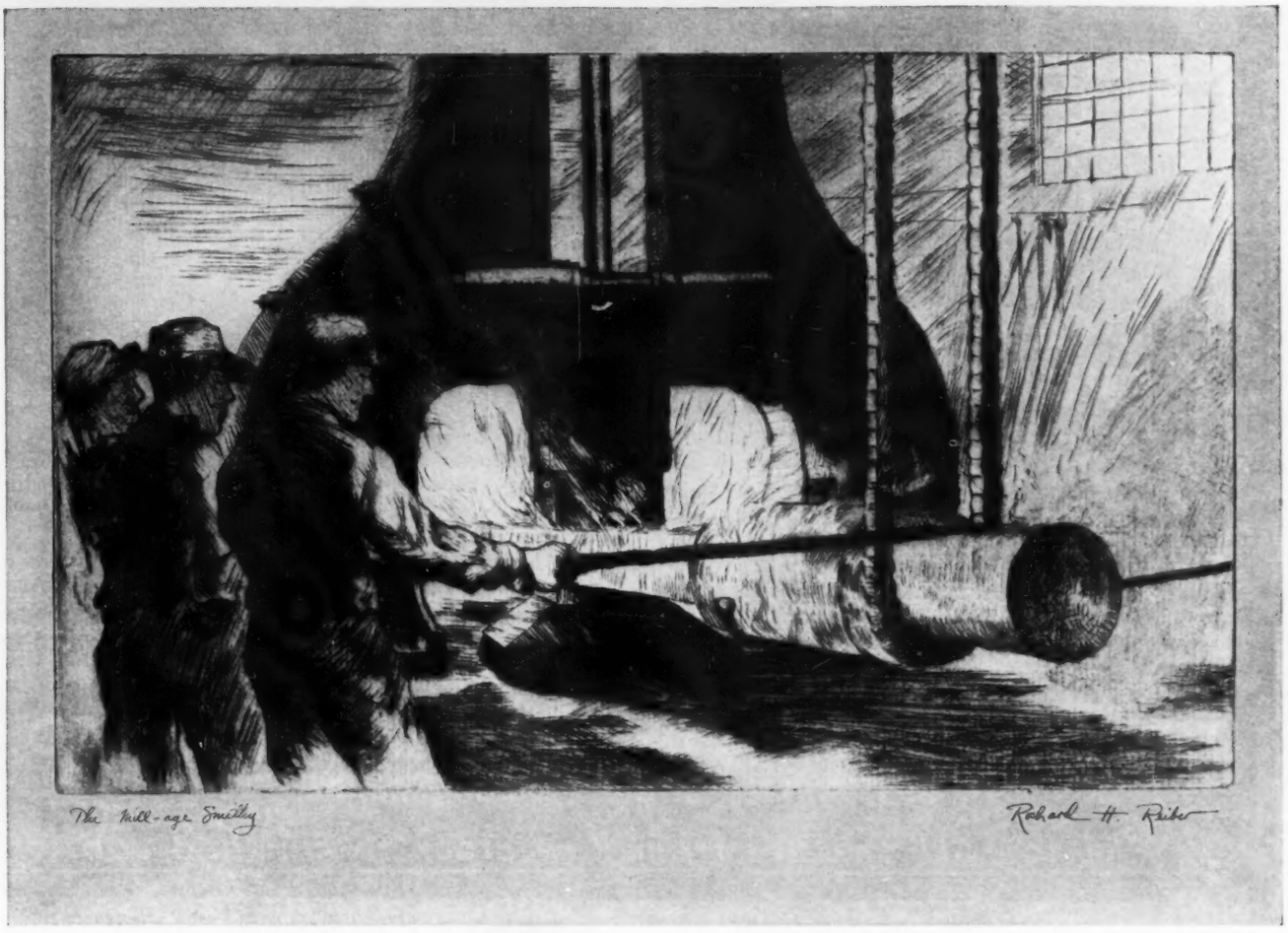

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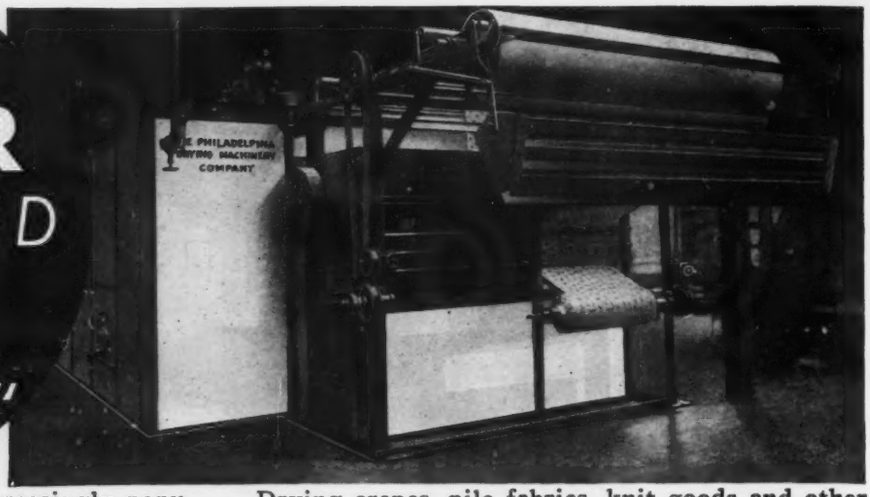


The *New*, advantageous and increasingly popular process of Crease-Proofing is *simple* and *economical* when the fabrics are dried in the New "Hurricane" Automatic Loop Dryer.

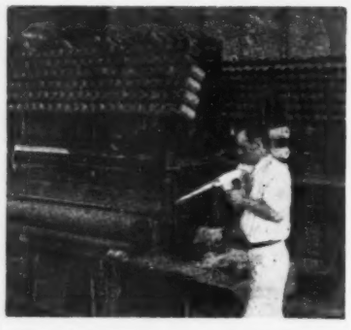
This machine can be operated at the *high* temperatures necessary for "Crease-Proofing." It also is the most *suitable* and *economical* machine for Shrinking cotton and woolen cloth, and for Drying crepes, pile fabrics, knit goods and other materials, which benefit by air drying at *moderate* temperatures.

The latest models are equipped with *Turning Poles* and make use of an entirely New system of Re-circulating and Distributing the air, which greatly *increases capacity* and *reduces operating costs* by one-third to one-half.

THE PHILADELPHIA DRYING MACHINERY CO.

3351 Stokley Street, Philadelphia, Pa.

DRYERS for ALL Textiles from Raw Stock to Finished Fabrics



This Mill Cuts Cleaning Costs with BREUER'S BALL BEARING TORNADO PORTABLE ELECTRIC BLOWER

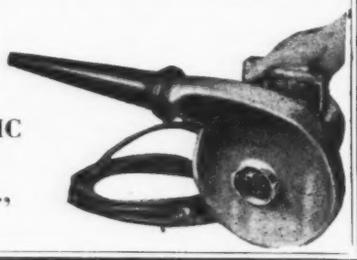
A prominent hosiery mill wrote as follows: "The Tornado Blower which we purchased is giving excellent satisfaction. One man can clean the motors and machinery in an hour where formerly fifteen men were required. We consider the blower pays for itself in the saving of waste in seconds alone to say nothing of the saving in cleaning time."

The new Model 10 Tornado has twice the power of other blowers. 46¾" waterlift. 1 H.P. G.E. ball bearing motor—no oiling. Attaches to any light socket.

It drives a 275 m.p.h. blast of clean, dry air into motors and intricate machine parts, quickly cleaning spindles, cams, looms, pulleys, belts, needles, rolls, frames and textile machines of all types. Can be used as blower, suction cleaner or insecticide sprayer. Fastest, safest, most economical method of cleaning. Removes lint and reduces fire hazard.

Write today for details of free trial offer. No obligation.

10 DAYS' FREE TRIAL



BREUER ELECTRIC MFG. CO.,
845 Blackhawk St., Chicago, Ill.

BRETON MINEROL PROCESS

FREE!

● **BEAUTIFULLY ILLUSTRATED MANUAL** *In Colors*

● Full of valuable information. Send for Copy.

Learn why "MINEROL" offers a definite advantage in FIBRE MANUFACTURING and HEALTH PROMOTION.

BORNE SCRYMSER COMPANY

Originators of the "BRETON MINEROL PROCESS" for CONDITIONING COTTON and other textile fibres

MANUFACTURERS OF THE FAMOUS "BRETON" OILS FOR WOOL. SINCE 1874

17 BATTERY PLACE • NEW YORK

THE "BRETON MINEROL PROCESS" Equipment is Loaned to American Mills Without Charge.

THE BLAZED TRAIL NOW A TRAVELED HIGHWAY...

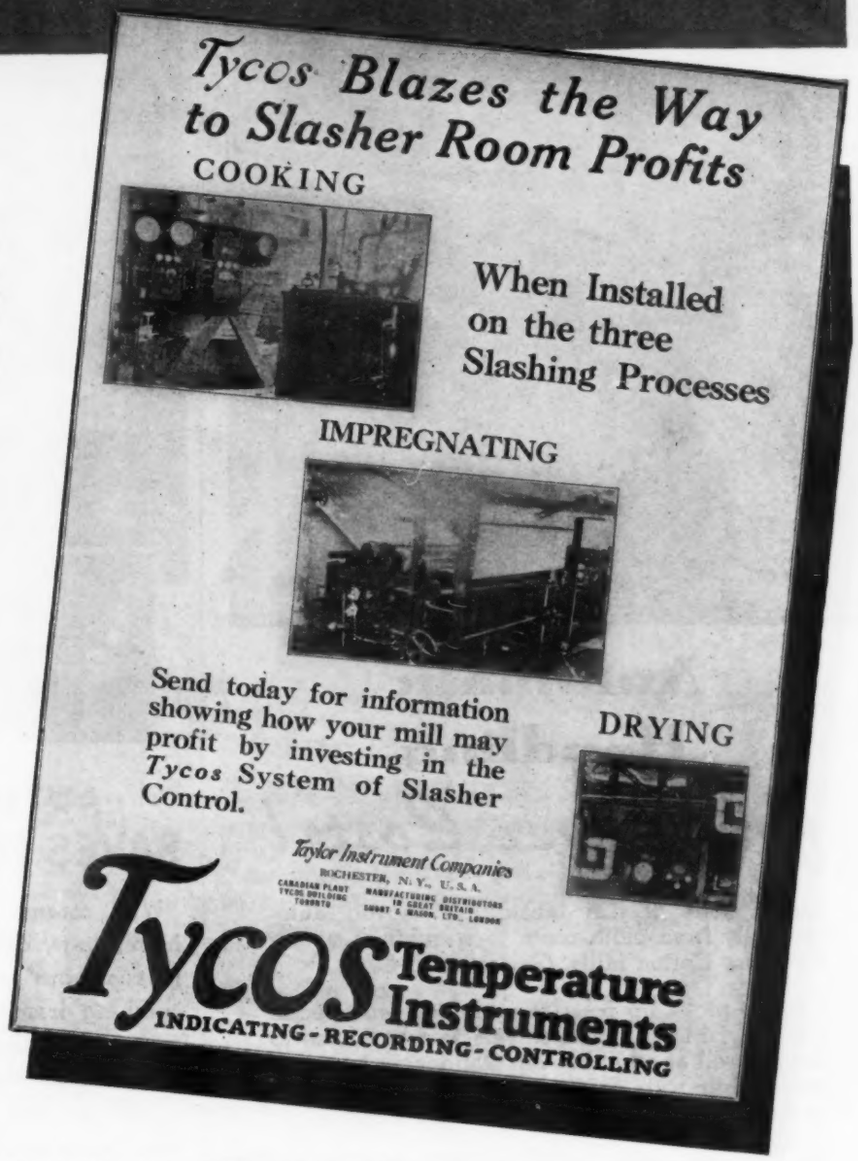
Even before this advertisement appeared years ago, Taylor Engineers pioneered a System of Slasher Control and showed mills a new way to profit

IT does not take long for a blazed trail to become a well-worn path . . . and then a busy highway—when there is good reason for people using it.

Taylor Engineers more than ten years ago blazed a new trail for textile mills. With a newly developed System of Slasher Control they laid out a way that led to greater Slasher Room profits. Mills proved that the path led to advantages in slashing and finishing and to economies that they had never enjoyed before, and others followed along the same way.

Today Taylor Systems of Automatic Slasher Control in many mills throughout the country watch every step in the process from composition of the size to final drying of the yarn. They deliver ideally conditioned warps that assure more uniform finished goods and a minimum of seconds. They save money on raw materials and bring in more profit on finished products. They more than pay for themselves in a remarkably short time.

This wealth of experience in every phase of Slasher Room Control is at your service. Every Taylor System is engineered to meet the exact mill conditions and to achieve definite results. For complete information on this Taylor Control and Taylor Service, ask a Taylor Representative. Or write to Taylor Instrument Companies, Rochester, N. Y., or Toronto, Canada. Manufacturers in Great Britain—Short & Mason, Ltd., London, England.


Tycos Blazes the Way to Slasher Room Profits
COOKING
When Installed on the three Slashing Processes
IMPREGNATING
Send today for information showing how your mill may profit by investing in the Tycos System of Slasher Control.
DRYING
Taylor Instrument Companies
ROCHESTER, N. Y., U. S. A.
Tycos Temperature Instruments
INDICATING - RECORDING - CONTROLLING

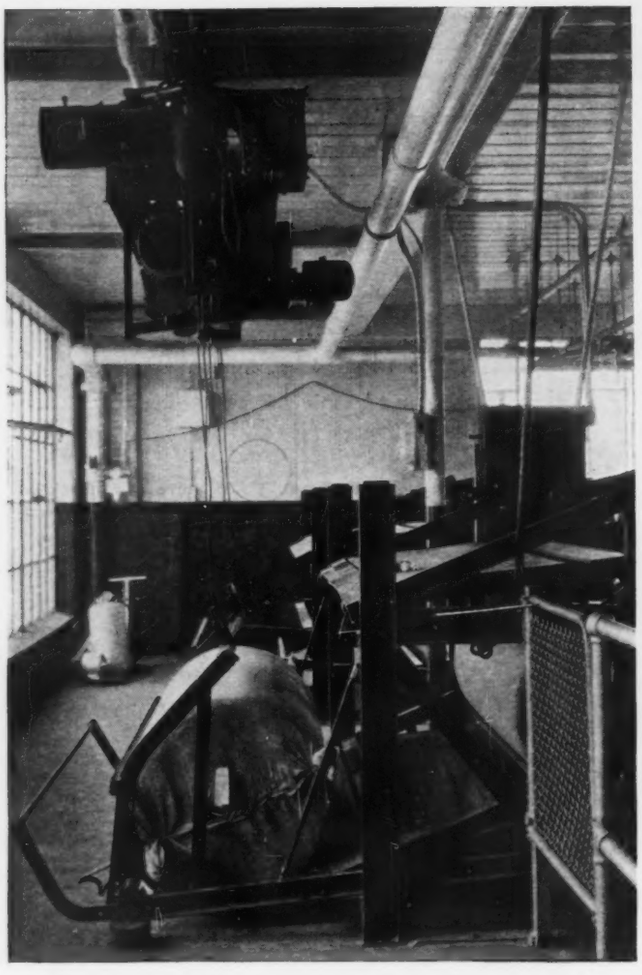
Reproduction of an advertisement on Taylor (called "Tycos" then) Slasher Control which appeared in Textile Magazines early in 1928. Pioneering work on this Control System started several years before.

• • •

Taylor

Indicating | Recording • Controlling

TEMPERATURE, PRESSURE *and* FLOW INSTRUMENTS



Automatic Handling *for Lower Costs!*

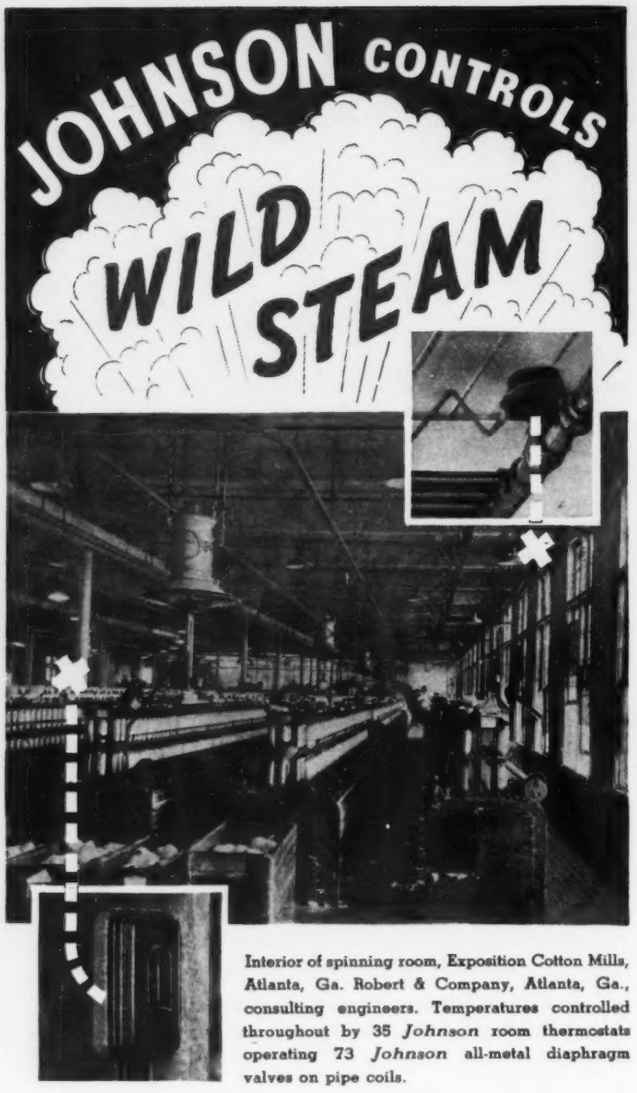
Heavy rolls of tire fabric are moved automatically from cloth room to warehouse at the Firestone Cotton Mills, Gastonia, N. C.

Carrier picks up rolls at either of two special loading tables. It then travels to warehouse to deposit roll at one of seven stations and returns for another roll, continuing for as many trips as determined by the central control panel.

Similar automatic handling systems can be arranged for bales, laps, beams, etc. Our engineers will be glad to tell you more about this new automatic drive unit. Write for special 24 page book illustrating the MonoTractor drive.

AMERICAN MONORAIL

13108 Athens Ave., Cleveland, O.



Interior of spinning room, Exposition Cotton Mills, Atlanta, Ga. Robert & Company, Atlanta, Ga., consulting engineers. Temperatures controlled throughout by 35 *Johnson* room thermostats operating 73 *Johnson* all-metal diaphragm valves on pipe coils.

AUTOMATIC CONTROL SAVES FUEL-and that's not all!

"Wild steam" wastes fuel, but it also overtaxes humidifiers, dries out the cotton. Weakened cotton means more waste in lint, more ends falling onto spinning frames, more loom stoppage. Mill operators realize the gravity of expensive delays. Stop these losses with *Johnson* control!

At no cost to you, a *Johnson* sales engineer will make recommendations for automatic control of pipe coils, unit heaters, humidifiers, air conditioning, and process work. Maintain the proper temperature, and humidity for every operation and save 20 to 40% on fuel alone! Johnson Service Company, Milwaukee, Wisconsin. Branch Offices in Atlanta, Ga., Greensboro, N.C., and all principal cities.

JOHNSON
AUTOMATIC TEMPERATURE AND HUMIDITY CONTROL
For Heating - Cooling - Ventilating & Air Conditioning Systems

Lick multiple-drive problems with Gilmer's "Fighting Five"

5 Features Distinguish a Gilmer V-Belt

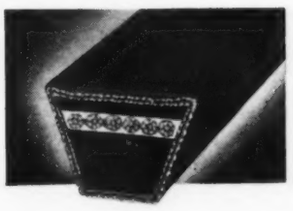
1 TOP RUBBER — It's *tension* rubber with extra "give" created so that Gilmers instantly flex to fit any groove perfectly — but tough enough so that Gilmers ride right without sinking too far. The moment flexing starts Gilmer *straight* sides bulge evenly, locking the sidewalls in a slipless power-grip. Gilmers eliminate "misfits" that cripple efficiency. Gilmers always are *wedged to work.*

2 PULLING CORDS — Numerous plies of tremendously strong, small-diameter cords carry the load. Each cord carries its share. The cords are locked in rugged bonding rubber, making it possible to increase the number of plies—*the pulling power of the belt*—and concentrate great strength in a thin pulling section, thus increasing flexibility. Gilmer's patented construction keeps these plies in a permanent horizontal plane and makes it impossible for them to pull apart under heavy loads.

3 BOTTOM RUBBER — Brute-strength rubber, developed after many tests, supports the Gilmer pulling cords in a parallel plane, no matter how heavy the load. This special rubber is *heat-resisting.* Gilmer makes high speeds possible, because Gilmer V-Belts *run cool.*

4 DOUBLE JACKET — Gilmer uses two jackets and more than triples the wear you get. These twin jackets protect the working parts of Gilmer V-Belts from oil, grease, and dirt. The thin film of flexible rubber between the two jackets distributes the wear evenly and prevents worn spots at any one point.

5 CONTROLLED STRETCH — Every Gilmer V-Belt is pre-tested for stretch under maximum load, and built to insure the correct length at full working tension. Gilmer V-Belts on multiple drives match perfectly and permanently in operation.



Gilmer Single Strand V-Belts mean silent, slipless *economy* on fractional horsepower drives.

L. H. GILMER COMPANY, Tacony, Philadelphia

Even if somebody could

Give

you your fire insurance—

Could You Afford to Accept?

IF some company offered you complete fire insurance coverage without any cost or obligation, as a competitive measure—and further agreed that you leave your property in its present condition as regards fire hazards—could you *afford* to make the bargain?

Many people who buy their insurance intelligently would answer with an emphatic "No!".

They have seen too many cases where interruption of business by fire has caused losses greater than the physical damage of the fire itself . . . greater than insurables like loss of rentals, or profits on orders canceled because of delayed deliveries. They have seen situations where competitors made inroads they could never have made under normal conditions; where confidence and good will were shaken—tenants, clients, customers lost . . . for all time.

That is one of the reasons why Improved Risk Mutual coverage is appealing to more insurance buyers each year. Not merely for the high quality of its indemnity—though this is of course paramount. Not merely for its economy . . .

. . . But most of all because its selection and improvement of risks, through the work of its nation-wide staff of fire prevention engineers, give protection against the hazard behind the hazard.

It's worth looking into!

IMPROVED RISK MUTUALS

75 Fulton Street, New York

A nation-wide organization of old established, legal reserve companies writing the following types of insurance: Fire • Sprinkler Leakage • Use and Occupancy • Tornado and Windstorm • Earthquake • Rents • Commissions and Profits • Riot and Civil Commotion • Inland Marine

"CELLOPHANE" WRAP *protects quality* *and* MOVES GOODS

—says Cannon Mills Superintendent

MR. G. G. ALLEN, Superintendent of Cannon Mills Co., Kannapolis, North Carolina, says:

"The quality and sanitary appearance of Cannon diapers are of great importance to us. Rigid inspection and fine workmanship are, of course, the primary factors in maintaining this quality.

"We realize, however, that quality must be delivered right into the consumer's hands. And it must *look* like quality.

"With 'Cellophane' transparent wrapping, we not only protect our original workmanship—but move goods faster because they are more attractive to the consumer."

PACKAGE INFORMATION

Our Field Representatives are qualified to help with suggestions about efficient production line methods in packaging. E. I. du Pont de Nemours & Co., Inc., "Cellophane" Division, 350 Fifth Avenue, New York City.

Cellophane
TRADE MARK

"Cellophane" is the registered trade-mark of E. I. du Pont de Nemours & Co., Inc.

DU PONT

WHY CONTINUE TO SUFFER THE "HEADACHES" OF UNCONTROLLED INDOOR WEATHER!

Running a mill at a profit is a real accomplishment under the best of conditions. It's an extremely difficult... if not impossible... job under the handicaps of uncontrolled indoor weather.

Many mills have speeded up machines... at the expense of regain. Others want to speed up... but don't, for fear of regain troubles. Continual window opening and closing..."wetting-down"... large rejects... production delays. These "headaches" plague the executives of mills who operate under uncontrolled-weather uncertainties.

If you are faced with these problems, we are confident that we can solve them for you. We would welcome an opportunity to cooperate ...and to put our 75 years of air engineering experience at your service. On request we will gladly have one of our well-posted and long-experienced engineers call and discuss your problems with you.

Recent Sturtevant Installations:

DuPont Rayon Company; Hudson Silk Mills, Charlotte, N.C.; E. M. Holt Plaid Mills, Burlington, N.C.

THE COOLING AND AIR CONDITIONING CORPORATION

Division of B.F. Sturtevant Co.

HYDE PARK BOSTON, MASS.

Atlanta, Camden, Chicago, Greensboro, New York

Offices in all principal cities

Sturtevant

Evaporative Cooling

FOR BETTER PRODUCTS AT LESS COST

ACMA

PIONEERS IN EVAPORATIVE COOLING FOR TEXTILE MILLS

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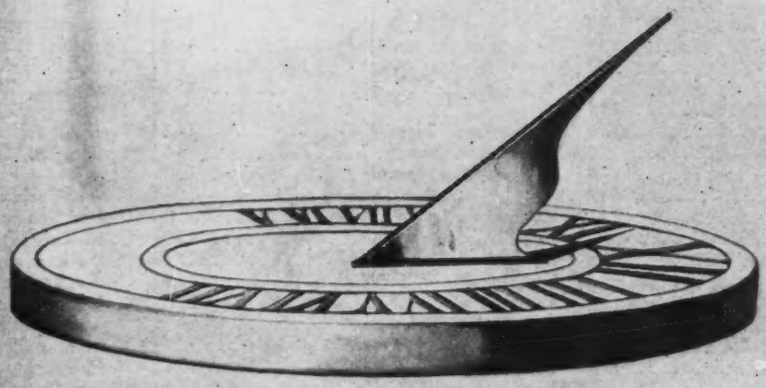
"Our yesterdays follow us; they constitute our life, and give character and force and meaning to our present deeds."

—*Joseph Parker*



The lengthening shadow on the sundial is about to mark the passing of another year . . . another milestone in the course of our experience. Reckoned simply as the March of Time, a year is of little consequence . . . but joined to 37 other years of experience it helps form an imposing background by which we can be guided in the future.

Facing the new year—and the future, with an enviable record of accomplishment over the past 38 years, SONOCO continues its guiding policy of exhaustive technical research toward further development of products and service.

SONOCO PRODUCTS COMPANY

BRANTFORD ONT. | HARTSVILLE S. C. | MYSTIC CONN.